University of Maryland School of Medicine

1999 - 2001 Catalog

THE OATH OF HIPPOCRATES

I do solemnly swear by that which I hold most sacred that I will be loyal to the profession of medicine and just and generous to its members. That I will lead my life and practice my art in uprightness and honor. That into whatsoever house I shall enter it shall be for the good of the sick to the utmost of my power. I hold myself aloof from wrong, from corruption, from the tempting of others to vice. That I will exercise my art solely for the cure of my patients, and will give no drug, perform no operation for a criminal purpose even if solicited, far less suggest it. That whatsoever I shall see or hear of the lives of men which is not fitting to be spoken, I will keep inviolably secret. These things I do promise and in proportion as I am faithful to this my oath, may happiness and good repute be ever mine; the opposite if I shall be forsworn.

The University of Maryland at Baltimore is accredited by the Middle States Association of Colleges and Schools. The School of Medicine is accredited by the Liaison Committee on Medical Education, the accrediting body for the Association of American Medical Colleges and the American Medical Association.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE
University of Maryland, Baltimore
655 West Baltimore Street
Baltimore, Maryland 21201-1559

Admissions Office: 410-706-7478

The University of Maryland, Baltimore is an equal opportunity institution with respect to both education and employment. The university's policies, programs and activities conform with pertinent federal and state laws and regulations on nondiscrimination regarding race, color, religion, age, national origin, sex and handicap.

The School of Medicine has the objective of securing a broad racial, sexual and ethnic balance in its enrollment. To achieve this objective it gives every consideration to minority student applications.

UNIVERSITY OF MARYLAND
SCHOOL OF MEDICINE
1999 – 2001

UNIVERSITY OF MARYLAND, BALTIMORE

Welcome From the Dean

I am delighted to share with you information in this catalogue which provides an overview of the University of Maryland School of Medicine and its educational programs. We are very proud of our students who are a wonderfully diverse group from all over the country. The University of Maryland School of Medicine has a proud tradition of excellence beginning with the opening of the school in 1807. Our dedicated and outstanding faculty and students continue this tradition today.

I am pleased that you are interested in the School of Medicine and I invite you to learn all that you can about our school. If you still have questions, please call our Admissions Office at (410) 706-7478 or check our website at http:\\www.schmed01.ab.umd.edu

Donald E. Wilson, M.D., M.A.C.P.
Dean

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Profile

Established in 1807, the University of Maryland School of Medicine is the fifth oldest medical school in the United States and the first to institute a residency training program. The School of Medicine was the founding school of the University of Maryland, and today it is an integral part of the 11-campus University System of Maryland. On the University of Maryland, Baltimore campus, the School of Medicine serves as foundation for a large academic health center that combines medical education, biomedical research, patient care and community service. While its traditional excellence remains constant, the School of Medicine and its national reputation continue to grow.

The School of Medicine boasts the oldest building in the Western hemisphere in continuous use for medical education, the meticulously restored Davidge Hall, built in 1812. The fourteen-floor Bressler Research Building and the nine-floor Medical School Teaching Facility, two major classroom and laboratory buildings, were completed in the 70's. The mid-rise Biomedical Research Facility was completed in late 1992. Just completed in 1995, the first phase of the Health Sciences Facility, an interdisciplinary research and teaching facility, provides School of Medicine clinical and basic science departments and animal care facilities with approximately 80,000 additional net square feet. The Health Sciences Facility provides the much-needed connection of the Medical School Teaching Facility to Howard Hall and the Bressler Research Building. With completion of the Health Sciences Facility, all but one major medical school research building is physically linked to the University Hospital and the Veterans Affairs Medical Center. Construction included total renovation of the existing second-floor Howard Hall teaching laboratories into pods with state-of-the-art audio-visual equipment and other amenities. These study areas are considered the most optimally outfitted of any labs in the country.

The University of Maryland, Baltimore campus continues to expand as well. The state-of-the art 326-bed Veterans Affairs Medical Center immediately adjacent and connected by bridge to the University of Maryland Medical System (University Hospital), joined the campus in 1993. Gudelsky Tower, the new high-tech University Hospital patient tower opened in 1994, followed in 1995 by complete restructuring and enhancement of the two-block hospital facade and main lobby. Completion in late 1995, the University of Maryland Biotechnology Institute's Medical Biotechnology Center occupies a 196,000 square foot facility on the campus. The center focuses on medical biotechnology research and training and serves as a catalyst for economic development in health related aspects of molecular biology and medical biotechnology at the basic, applied and clinical levels. The new Health Sciences Library opened in April 1998. It provides cutting-edge service and amenities to its users and also serves as a Regional Medical Library of the National Library of Medicine.

THE UNIVERSITY OF MARYLAND, BALTIMORE

The University of Maryland, Baltimore, designated "UniversityCenter" by the city of Baltimore administration, is the founding campus of Maryland's public university system. It is a thriving center for education, patient care, life sciences research and community service. Seven graduate and professional schools — the Dental School and Schools of Law, Medicine, Nursing, Pharmacy, Social Work and the Graduate School — together with the University of Maryland Medical System, its Cancer Center, R Adams Cowley Shock Trauma Center and Institute for Psychiatry and Human Behavior, the Baltimore Veterans Affairs Medical Center and the University of Maryland Biotechnology Institute's Medical Biotechnology Center — educate research scientists and many of the region's health care, law and social work practitioners.

With $146 million in sponsored program support in FY98, UMB is one of the fastest growing biomedical research centers in the country. The University of Maryland, Baltimore is ideally configured to maximize collaborative opportunities with government agencies in tackling complex health care, public policy and societal issues. Its location within the Baltimore-Washington-Annapolis triangle—at the hub of one of the greatest concentrations of health care institutions, research facilities, government agencies and professional associations in the nation—offers a unique combination of strengths to comprehensively address regional problems with the resulting conclusions having the potential for global implications. Areas of multidisciplinary research, scholarship and community action include AIDS, aging, vaccine development, multiple sclerosis, schizophrenia, hypertension, lead poisoning, cancer, child abuse and homelessness, offering students a wide selection of field experiences.

Partnerships among university components and with the University of Maryland Medical Center and the Veterans Affairs Medical Center continually strengthen interdisciplinary research, education and service endeavors.

MILESTONES

The foundation of the School of Medicine dates back to 1789 with the organization of the Medical Society of Baltimore and Baltimore physicians' awareness that their numbers were decreasing following the Revolutionary War. Foreseeing a potential opportunity for charlatans to "practice" the art of medicine, founders of the medical society began to train prospective physicians in their own homes, offering instruction in anatomy, surgery and chemistry. Soon faced with strong citizen protest of anatomical dissection, the physician-teachers petitioned the Maryland State Legislature to establish a college of medicine on a firm basis and under the protection of the law, and a charter incorporating the College of Medicine of Maryland was approved by the Maryland General Assembly on December 18, 1807.

The fledgling College of Medicine of Maryland was in urgent need of a proper building, and a lottery was authorized—not to exceed $40,000—to benefit the

medical college's building fund. Over the next 15 years, seven more lotteries were authorized to benefit the school.

Dr. John Beale Davidge, a native Marylander and a physician trained in Scotland, became the first dean and took the chair in surgery. His founding faculty were Dr. James Cocke (anatomy and physiology), Mr. James Shaw (chemistry) and Dr. Nathaniel Potter (theory and practice of medicine). From Col. John Eager Howard, a Revolutionary War hero and former Maryland governor, Davidge, Shaw and Cocke purchased land that was "quite some distance from town" to protect against unruly mobs who had demolished the doctors' first anatomical theater in violent opposition to the dissection of human cadavers.

From the school's very beginning there was strong emphasis on bedside teaching. The first class of seven received clinical instruction at the Baltimore Almshouse, a warehouse, a theater and infirmary for the poor.

Completed in 1812, Davidge Hall was designed by Robert Carey Long, Sr. and modeled after the Pantheon in Rome. The first classes were held in the new building in 1813, the same year the College of Medicine of Maryland became the University of Maryland. In addition to its two expansive circular amphitheaters constructed one atop the other, Davidge Hall was built with dissecting cubbyholes, secret stairways and hidden exits that afforded early students and their professors safe passage from angry mobs. It is said that the 1812 British bombardment of Fort McHenry was viewed from the veranda of Davidge Hall, while in the harbor a few miles away Francis Scott Key was writing the "Star Spangled Banner." Davidge Hall was meticulously renovated in the early 1980's and recognized as a National Historic Place. In 1998 is was designated a National Historic Landmark.

The Baltimore Infirmary, forerunner of the University of Maryland Hospital, was built opposite Davidge Hall in 1823, on the site of the present Baltimore Student Union. It was the first hospital founded by a medical school for the express purpose of clinical instruction. It was also the site of the first intramural residency program established in the United States. Senior medical students lived in the hospital while helping to care for patients. The building was still in active use until 1973, when its clinics were moved into the newly constructed north-wing addition to the University of Maryland Hospital (circa 1934) and the old building razed.

In curriculum development, the University of Maryland School of Medicine enjoys a long and proud tradition as an innovative leader. Maryland was the first school to recognize the value of the basic sciences. In 1800, Dr. John Crawford was the first to vaccinate Baltimoreans against smallpox. As early as 1810, he had presented evidence of the contagious character of tuberculosis. The gift of Dr. Crawford's personal library became the nucleus of Maryland's extensive medical library.

In 1833 the school introduced the first preventive medicine course. The techniques of auscultation and percussion were taught at the School of Medicine for the first time in Baltimore as early as 1841, and in 1844 Dr. David Stewart, the first professor of pharmacy in the United States, initiated his lectures at Maryland. In 1848 Maryland became the first school to require anatomical dissection, followed six years later by the introduction of compulsory courses in gross and microscopic pathology. Compulsory courses in experimental physiology and microscopy were introduced six years later. A milestone in cancer research occurred in 1853, when

Maryland's Dr. Francis Donaldson became the first person in America to advocate biopsy and microscopic diagnosis of malignancy. Maryland was the first to establish chairs in the diseases of women and children (1867) and diseases of the eye and ear (1873).

Mergers with the Baltimore Medical College in 1913 and the College of Physicians and Surgeons in 1915 enabled the school to expand its clinical facilities and faculty. Early in the twentieth century, Drs. James Rowland and Louis Douglas initiated off-site obstetrical care and home delivery, prenatal clinics and an Rh blood typing laboratory, significantly improving infant and maternal health.

The School of Medicine has had its share of medical breakthroughs, including in more recent decades the first successful antibiotic treatment of Rocky Mountain spotted fever, the first cure for typhoid fever and the first laparoscopic ulcer removal. In 1967 the school began one of the first formalized family practice residency programs in the country. In 1994 Maryland became the first medical school in the nation to integrate medical informatics into its curriculum.

The R Adams Cowley Shock Trauma Center, which opened in 1961, serves as a worldwide model for emergency medical treatment. The University of Maryland Cancer Center is a strong participant in new drug development and research, and virtually every important drug used in oncology has been tested in this program.

Today's University of Maryland School of Medicine is an exciting, vibrant institution where medical history continues to be written.

EDUCATION

The School of Medicine initiated a new curriculum with the 1994 entering freshman class. The new curriculum is different from the previous, more traditional curriculum in the following areas: the basic sciences are no longer taught as discipline-specific "courses" but are integrated and taught as "blocks," using interdisciplinary teaching with both basic and clinical science teachers. Committees chaired by faculty members from major block courses determine course content and teaching methodologies. Lectures, small discussion groups and laboratories are used with extensive time available for self-learning. Problem-based learning was tested in several blocks during the 1994–95 academic year with more widespread use in the 1995–96 freshman year. The sophomore year also utilized the interdisciplinary "blocks" approach as the freshman class moved into the second-year curriculum in 1995–96. There is a marked reduction in lecture hours with an emphasis on independent study with availability of mentors and learning resources. Another major change is a half-day course dedicated to the Introduction to Clinical Practice which was initiated at the inception of the 1994–95 freshman year and continues throughout the first two years. This course includes instruction in interviewing techniques, physical examination, intimate human behavior, ethical issues and the dynamics of ambulatory care delivery. Much of this two-year longitudinal experience is gained off-site in clinical settings. Changes within the last two years of medical education include a mandatory ambulatory month rotation in Family Medicine, emphasis on ambulatory teaching in all other clinical rotations,

and a longitudinal half-day experience in a clinical setting in which the student will have continuity of care for patients and families.

The ties between the medical school and the hospital enrich and enhance both medical education and health care. All physicians practicing at the University of Maryland Medical System and at the Faculty Professional Building have School of Medicine faculty appointments and are actively involved in the educational process in addition to supervising residency training for more than 600 postgraduate positions at the University Hospital and affiliated hospitals. The Medical System includes a 747-bed teaching hospital, the Greenebaum Cancer Center and R Adams Cowley Shock Trauma Center on campus, as well as the James Lawrence Kernan and Deaton Hospitals off campus.

Medical care and education are further enhanced by the location of the Baltimore Veterans Affairs Medical Center on this campus in a new state-of-the-art hospital adjacent to the School of Medicine and the University Hospital. Together, these facilities serve as the major clinical training sites as well as a source of comprehensive health care for the local community and the state. The school also has established clinical affiliations throughout the region, giving students unusual flexibility in clinical experiences.

In an effort to nurture more interest in basic research and to meet the increasing demand for physician-scientists, the school offers a combined MD/PhD program in 10 medical disciplines and an MD/MS program in preventive medicine. Although the schedule can be flexible, MD/PhD students typically complete the freshman and sophomore years of medical school, enroll as graduate students until PhD completion, and then begin their clinical clerkships. Combined MD/PhD degree studies can be completed within six-to-eight years.

Medical students in the track leading to the MD/MS in preventive medicine may complete the dual-degree program in five years. The fifth year is counted fully as one year of preventive medicine residency training by the American Board of Preventive Medicine.

Graduate programs are offered at the master's and doctoral levels in the basic sciences. There is a baccalaureate program in medical and research technology, a master's program in physical therapy, a master's program in genetic counseling, as well as a number of interdisciplinary programs with both service and research components.

Continuing education programs are sponsored for practicing physicians throughout the region.

The School of Medicine offers students an excellent spectrum of resources and field experiences. Located along the Baltimore-Washington corridor, the school is in the midst of a great concentration of health care institutions, research centers, government agencies and professional associations.

RESEARCH

The University of Maryland School of Medicine is one of the country's fastest growing research institutions, with total awards of $123 million in FY98. For the

federal year ending October 1997, the School of Medicine ranked 13th among public medical schools in direct NIH funding, ranking in the top 20 percent of all public medical schools.

With regard to direct NIH funding, five of our 22 departments: anatomy, biochemistry and molecular biology, epidemiology and preventive medicine, pediatrics and ob-gyn ranked in the top 20 of all medical schools; and seven of our departments: anatomy, biochemistry and molecular biology, epidemiology and preventive medicine, pediatrics, ob-gyn, pharmacology and physiology, rank in the top 10 of public medical schools.

It is extremely satisfying to be known as a first-class research institution, in addition to being known for education and training outstanding clinicians.

That funding, combined with the expertise and cutting-edge research of the school's life scientists, has produced some remarkable breakthroughs:

- a genetically engineered potato capable of delivering a vaccine that protects against E.coli, the bacteria responsible for travelers' diarrhea

- discovery of a new human adrenal hormone that is an isomer of the cardiotonic steroid ouabain, and is linked to hypertension

- development of a vaccine for rotavirus, the most prevalent cause of dehydrating diarrheal disease in infants and children throughout the world, particularly in underdeveloped countries

- perfection of a laparoscopic kidney removal technique that shortens hospital stays, reduces blood loss and pain, and leaves a dramatically smaller incision

- a test allowing earlier detection of the HIV virus

In the last several years the school has produced more than 100 invention disclosures and nearly 40 patents, establishing Maryland as a hub for life sciences activity in the region. Technologies developed at the School of Medicine have formed the basis for at least five Baltimore-area companies.

Other research projects are examining how intervention can make a difference for inner city youngsters trying to avoid the perils of HIV infection, drug use and street violence. Another project is tracking how intensive outreach can keep trauma victims from becoming repeat shock trauma patients.

COMMUNITY SERVICE

The School of Medicine's most important mission continues to remain the same after nearly two centuries, that of educating physicians to meet the health care needs of the people of Maryland and beyond. The School of Medicine is a vital part of the West Baltimore neighborhood in which it resides, and its faculty, staff and stu-

dents are increasingly involved in activities that bring a better quality of life to its neighbors.

Each year the School of Medicine students provide hundreds of thousands of hours of service in hospitals, clinics, homeless shelters and schools throughout the state. Program involvement includes:

- S.T.O.P. AIDS—Student/Teacher Outreach Program—sends volunteer students into Baltimore City Public Schools to discuss HIV prevention. Thousands of West Baltimore elementary and middle school students have been taught about the disease's medical and social implications.

- Domestic Violence Workshop - student volunteers sponsor a workshop that creates a heightened awareness of this complex problem and teaches future physicians how to spot the sometimes subtle signs of abuse.

- Health Care and the Homeless Project—allows students to spend time at shelters such as South Baltimore Station, providing health care screening and education.

Faculty members provide countless uncompensated hours of primary and preventive care to the residents of Baltimore through programs such as:

- Baltimore Alliance for the Prevention and Control of Hypertension and Diabetes—brings all of the resources of the University of Maryland physician community together to promote accessible, comprehensive hypertension and diabetes education, prevention and treatment strategies within the Baltimore community, with emphasis on the underserved.

- Focus on Kids—a community/university partnership that addresses the many issues, including HIV, drug use and violence, facing pre-adolescents and adolescents

- Paquin Family Health Center—a school-based health center at Paquin High School, Baltimore City's school for pregnant young women and teen mothers. Primary, pre- and post-natal care and psychosocial support are provided for mother and child.

THE CAMPUS AND BEYOND

The School of Medicine is an integral part of one of the country's first centers for professional education and research. Its urban campus, shared with six other professional schools and the new Health Sciences Library, the University of Maryland Medical System, the University of Maryland Biotechnology Institute's Medical Biotechnology Center and the Baltimore Veterans Affairs Medical Center, also hosts the Hope Lodge and Baltimore Ronald McDonald House, both offering low

cost housing and a home-atmosphere for adult and pediatric outpatients and their families receiving medical treatment in the Baltimore area.

Opportunities abound for faculty and students to join with other health and human service professionals in interdisciplinary study, informal discourse and collaborative clinical practice and research, offering students a wide selection of field experiences.

In addition to professional opportunities, the city of Baltimore offers a stimulating environment in which to live and study. Baltimore residents enjoy the sophistication of a large metropolitan city combined with easy accessibility to surrounding beaches, mountains and rural areas. The many attractions and resources of Washington, D.C. are less than a one-hour drive from Baltimore.

Having been the setting for significant events in the history of our country and a renowned foreign-commerce seaport, Baltimore maintains a strong feeling of the past, typified by the many charming neighborhoods of restored houses and an abundance of historic monuments and buildings. Within easy walking distance of the campus is the nationally acclaimed Inner Harbor area where Harborplace, the National Aquarium, Maryland Science Center, Colombus Center and the Pier 6 Pavilion share the festival atmosphere of the harbor with hotels, shops and restaurants, water taxis, pleasure boats and tour boats and a variety of frequently visiting international ships. Both restored and newly constructed townhouses and condominium complexes share the waterviews, excitement and atmosphere of downtown living.

Warm weather months signal festival time in Baltimore with such annual offerings as Preakness Festival Week, Artscape, the Baltimore City Fair, the Flower Mart and the many ethnic festivals that celebrate the city's diverse populations. As a cultural center, Baltimore has offerings to please the most discriminating, including a world-class symphony orchestra, excellent museums and libraries, professional theater, ballet and opera.

For sports fans Baltimore boasts a varied menu. Offerings include American League Baseball with the Orioles, professional football with the NFL Ravens, indoor soccer and ice hockey, NCAA and club lacrosse, horseracing and steeplechase and polo in the suburban counties. The home of the Baltimore Orioles, Oriole Park at Camden Yards, is but a two-block stroll from the University of Maryland, Baltimore campus and the new Ravens' stadium immediately adjacent to it inaugurated the 1998 season. There are numerous public golf courses in the city and surrounding counties, and the Baltimore harbor and nearby Chesapeake Bay offer unparalleled opportunities for boating and water sports. Gastronomy aficionados will delight in experiencing the seafood for which the region is famous.

Admissions Information

APPLICATION

The University of Maryland School of Medicine is a participant in the American Medical College Application Service (AMCAS). All requests for a place in the first-year class must be initiated by an AMCAS application. AMCAS application request cards can be obtained from AMCAS, Section for Student Services, Association of American Medical Colleges, 2501 M Street, N.W., Lobby-26, Washington, D.C. 20037-1300, or from the Committee on Admissions, School of Medicine, University of Maryland, Baltimore, 655 West Baltimore Street, Baltimore, Maryland 21201-1559. In addition, they are usually available from the premedical advisory office at the undergraduate college. AMCAS application material is ready for distribution about mid-May of the year in which an individual plans to submit an application to the School of Medicine.

For the School of Medicine, the AMCAS application is the first of a two-stage application process and is due in Washington by November 1. The Committee on Admissions thoroughly reviews the AMCAS application and, based on the information contained in it, determines whether the second stage (School of Medicine) application form will be sent. A non-refundable application fee ($50), payable to the University of Maryland School of Medicine, is sent only with submission of the second stage application form, which is due by December 1. All applicants who are determined to be residents of the state of Maryland are invited to submit a second-stage application. Nonresidents will either be sent second-stage application material or will be informed that the Committee on Admissions cannot continue the application process.

The application form, supporting credentials and letters of recommendation should be filed as early as possible in the application period. Please do not have letters of recommendation sent prior to submission of the second-stage application.

The applicant must assume responsibility for assuring that all required materials and the completed application packet are filed with and received by the Committee on Admissions. The applicant is expected to respond truthfully and completely to all questions on the AMCAS and School of Medicine application forms. An applicant who provides false or misleading information may be denied admission or, if enrolled before discovery of irregularity in the application process, may be dismissed from the school.

EARLY DECISION PROGRAM

The University of Maryland School of Medicine has an Early Decision Program for applicants who are sure that their first choice of medical schools is the University of Maryland. The Committee on Admissions interviews selected early decision

applicants and makes a decision on these students before considering the regular pool of applicants. By applying for early decision, the highly qualified applicant avoids having to make numerous other applications. Applicants with less competitive academic credentials, or those without the support of their premedical advisor, are discouraged from applying through this program.

The early decision applicant must apply only to this school by the AMCAS deadline of August 1. Applicants must provide all supplementary information by September 1. Interviews will take place at the medical school between mid-August and late September. No one will be accepted without an interview. If offered a place by this school, the applicant cannot apply elsewhere. All decisions for this program are made by October 1.

The Committee on Admissions can make one of three decisions for each early decision applicant: 1) acceptance; 2) rejection; or 3) placement into the regular applicant pool for review at a later time. Each applicant will be notified promptly of the Committee on Admissions' decision so that those not accepted through this program can apply elsewhere.

Individuals who apply through the Early Decision Program cannot apply to any other medical school until they are notified that they have not been accepted through this program at the University of Maryland.

APPLICANT SELECTION CRITERIA

Academic achievement, extracurricular activities, personal characteristics, recommendations from the premedical committee or college instructors, scores on the Medical College Admissions Test (MCAT) and personal interview all are considered in the committee's evaluation of an applicant. Academic achievement and/or high MCAT scores do not in themselves ensure acceptance. Of significant concern to the Committee on Admissions are the applicant's character, personality and potential to perform as a medical student and as a future physician. Personal integrity, emotional maturity and stability, motivation, interests and activities outside the classroom and interpersonal and communication skills are all carefully evaluated. Candidates for the M.D. Degree must have the attitudes, knowledge and skills to function in a broad variety of interpersonal situations and to render a wide spectrum of patient care. Proficiency in both written and spoken English is required. A copy of the School of Medicine's policy on Essential Requirements for Admission, Academic Advancement and Graduation is available upon request.

Applications from persons with outstanding credentials from other areas of the United States and Canada are welcome and will receive all possible consideration. Preference in the selection process is given to residents of the state of Maryland. Applications can be processed only from citizens of the United States and Canada or from individuals who reside in this country on a permanent resident visa. Occasionally an applicant residing in the United States holds a visa permitting him or her to live in the United States indefinitely and to establish residency in one of the states. Applications are accepted from these individuals. Those on a time-limited visa, such as a student visa, are not eligible for admission to the School of Medicine.

ADMISSION TO THE FIRST-YEAR CLASS

The student should plan a four-year undergraduate curriculum with a suitable arts or science major leading to a bachelor's degree. The Committee on Admissions encourages all applicants to pursue a course of study that is rigorous, scholarly and focused on areas that are intellectually challenging and interesting to the applicant. The Committee on Admissions seeks to admit students with diverse academic backgrounds.

A minimum of 90 semester hours of acceptable college credit is required, exclusive of physical education and military science. These must be earned in colleges or universities whose names appear on the current list of Accredited Institutions of Higher Education as compiled by the National Committee of Regional Accrediting Agencies of the United States. The only courses accepted are those that are approved for credit towards a degree by the university or college attended. Preparation at a foreign college or university must be supplemented by two years or more of work in an approved university or college in the United States.

Successful completion of the following courses and credits is required prior to matriculation at the School of Medicine. A grade of C or better is mandatory for all required courses.

Course	Semester Hours	
Biological sciences	8	with lab
General chemistry	8	with lab
Organic chemistry	8	with lab
General physics	8	with lab
English	6	

No more than 60 hours can be accepted from accredited junior colleges and then, only if these credits are validated by a college offering a Bachelor of Arts or Science degree. Advanced placement credits for science courses taken in high school may be accepted if the applicant's college (which grants the bachelor's degree) has given college credit for those courses. Other exceptions may be granted at the discretion of the Committee on Admissions.

Selected students who enter the School of Medicine from colleges that usually grant a baccalaureate degree after the successful completion of the first year of medical school are responsible for: (1) providing a certificate from the college or university certifying eligibility for this degree; and (2) meeting all requirements of the School of Medicine for advancement to the second year.

The MCAT must be taken no later than fall of the year preceding the desired year of entrance and must be taken within four years of the anticipated date of matriculation. Applicants should write to the MCAT Program Office, 2255 North Dubuque Road, P.O. Box 4056, Iowa City, Iowa 52243, for further information and registration forms, or to the Committee on Admissions.

A letter of recommendation from the undergraduate premedical committee or an officially designated premedical advisor is required. If the applicant's under-

graduate college or university does not have a premedical committee or advisor, three letters of recommendation are required from faculty who have taught the applicant. Two of these letters must come from instructors who have taught the applicant in the sciences. Applicants who have earned advanced degrees or who have been out of school for a significant length of time should submit a letter of recommendation from each component of their education or major work-related experience. Letters of recommendation should be submitted by individuals qualified to evaluate the applicant's accomplishments, productivity and character in an objective and critical manner. All letters of recommendation should be sent directly to the Committee on Admissions. They are not to be sent to AMCAS.

Each applicant's credentials are evaluated by the Committee on Admissions to determine if an interview is to be granted. All interviews are conducted at the University of Maryland School of Medicine. These interviews are scheduled in advance by invitation.

In its selection process, the Committee on Admissions must use the applicant's residency status that is in effect on the last day applications can be received (December 1). The University of Maryland, Baltimore office of records and registration is responsible for all decisions regarding residency. All questions, complaints and appeals regarding residency status should be directed to that office: 621 West Lombard Street, Baltimore, Maryland 21201-1575; 410-706-7480, not to the School of Medicine Office of Admissions. Nonresidents who matriculate at the School of Medicine should plan to maintain that status throughout the four years of medical school. Current standards for reclassification to in-state status are rigorous and make reclassification difficult.

For further information regarding the admissions process in general, the applicant is referred to a booklet entitled "Medical School Admissions Requirements," which can be obtained from:

Association of American Medical Colleges
Membership and Publication Orders
2450 N Street, N.W.
Washington, D.C. 20037-1131

ADVANCED STANDING

Students who have attended medical school in the United States and abroad are eligible to file application for admission to the third-year class only. Applications must be submitted between February 15 and May 1 of the desired year of admission. Applicants for advanced standing must meet all of the current first-year entrance requirements and must present acceptable medical school credentials and a medical school record based on courses that are equivalent to similar courses in this school. The applicant must have taken the MCAT examination and completed the undergraduate prerequisites. Applicants for admission with advanced standing to the third-year class also are required to take and pass Step I of the United States Medical Licensing Examination.

No student who has been dismissed from any medical school will be considered unless his/her former dean submits a letter addressed to the Committee on Admissions confirming that the student has been reinstated in good standing and is eligible for promotion. No student can be considered who is not eligible for promotion at the time of transfer.

Persons who already hold the degree Doctor of Medicine cannot be admitted to the medical school as candidates for that degree from this university. This is true for both advanced standing and first-year applicants. Individuals whose graduate work has been in the fields of dentistry, osteopathic medicine or podiatric medicine are not candidates for advanced standing.

Financial Information

DETERMINATION OF IN-STATE STATUS

An initial determination of in-state status for admission, tuition and charge-differential purposes will be made by the university at the time a student's application for admission is under consideration.

The University of Maryland, Baltimore Policy for Student Residency Classification for Admission, Tuition and Charge-Differential Purposes was changed effective with the fall 1991 semester. There are several significant changes in the criteria for determining eligibility for in-state status. Students currently classified as nonresidents are encouraged to review this policy. Copies of the policy are available at the registrar's office, office of records and registration, room 326, Baltimore Student Union, (410) 706-7480.

TUITION AND FEES (1998–99 ACADEMIC YEAR SCHEDULE)

	PER SEMESTER	PER YEAR
Application Fee/Matriculation Fee *		$ 50.00
Tuition—In-State	6,271.50	12,543.00
Tuition—Out-of-State	12,015.50	24,031.00
Student Activities Fee	35.00	70.00
Transportation Fee	11.00	22.00
Hospital Insurance (Individual) **	485.50	971.00
Student Liability Insurance ***	—	236.25
Supporting Facilities Fee	120.00	240.00
Disability Insurance	11.90	23.80
Dormitory Fee **** Contact Housing	1,355.00	2,710.00
Graduation Fee—Seniors		45.00
Student Government Fee	7.50	15.00
Hepatitis Vaccine (First Year)		140.00
TB Screening	10.00	
Laptop Computer - First Year	not determined	
Second Year	775.80	1,551.60
(Billed for four semesters)		
Late Payment Fee 5% or $100.00 Maximum		

** An application fee of $50 should be submitted with the formal application to the School of Medicine. This fee will be applied against the matriculation fee for accepted students. A partial tuition prepayment may be required before matriculation.*

*** Hospital insurance is required of all full-time students. A brief outline of the student health insurance program is furnished to each student. Students with equiva-*

lent insurance coverage must provide proof of such coverage by September 15 for fall registration and by February 15 for spring registration to Student and Employee Health at the time of registration to obtain a hospital insurance waiver. Rates quoted are subject to change.

**** Student liability (malpractice) insurance is required of all students.*

***** Rate based on 10-month year. Transient rates available for summer.*

NOTE: Costs are subject to change without prior notice

FEES

The application and/or matriculation fee partially defrays the cost of processing applications for admission and enrollment data in the professional schools. These fees are not refundable.

The tuition charges meet a portion of the costs for the educational program and supporting services.

Student activities fees are used to meet the costs of various student activities, student publications and cultural programs. The Student Government Association, in cooperation with the Dean's Office, recommends expenditure of the fees collected.

The supporting facilities fee is used in support of the expansion of various facilities on campus that are not funded or are partially funded through other sources.

The transportation fee helps to expand and enhance parking and shuttle services.

Diploma fees are charged to help defray costs involved with graduation and commencement.

Tuition and fees bills are due prior to the first day of class or a late payment fee of 5 percent, not to exceed $100, will be automatically added to the bill. On or before the due date, an installment payment plan is available to students with a balance over $500. The plan divides payments into three equal installments, the first paid by the due date and the balance in succeeding 30-day installments. The installment payment plan must be done in person in the student accounting office.

All checks and money orders should be made payable to the University of Maryland for the exact amount of the actual bill.

A service charge is assessed for dishonored checks returned unpaid by the drawee bank because of insufficient funds, stopped payment, postdating or drawn against uncollected items.

- For checks up to $24.99—$5
- For checks from $25 and up—$25

Late registration fees defray the cost of special handling involved for those who do not complete their registration on the prescribed days. No diploma, certificate or transcript will be issued to a student until all financial obligations to the university have been satisfied.

The university reserves the right to make such changes in fees and other charges as may be necessary.

REGISTRATION

To attend classes at the University of Maryland, Baltimore campus it is necessary to process an official registration. All students are required to register each term in accordance with current registration procedures. The balance of tuition and fees is due and payable on the dates specified for registration. Registration is not completed until all financial obligations are satisfied. Students who do not complete their registration, including the payment of their bill on the registration days, will be subject to a late registration fee.

Courses taken concurrently with a University of Maryland, Baltimore registration at another campus or institution must have program approval in advance by the appropriate University of Maryland, Baltimore officials. Off-campus registration forms are available in each dean's office and in the office of records and registration.

Although the university regularly mails bills to advance-registered students, it cannot assume responsibility of their receipt. If any student does not receive a bill prior to the beginning of a semester in which he or she has advance-registered, it is that student's responsibility to contact student accounting, Administration Building, during normal business hours.

Students who arena-register or advance-register and subsequently decide not to attend must notify the office of records and registration, room 326, Baltimore Student Union, in writing, prior to the first day of instruction. If this office has not received a request for cancellation by 5:00 p.m. of the last day before instruction begins, the university will assume the student plans to attend andaccepts the financial obligation.

After classes begin, students who wish to terminate their registration must submit an application for withdrawal to the office of records and registration. Students are liable for all charges applicable at the time of the withdrawal.

If a satisfactory settlement or agreement for settlement is not made with the business office within 10 days after a payment is due, the student is automatically barred from attendance at classes and will forfeit the other privileges of the School of Medicine.

WITHDRAWAL

Students who wish to leave the School of Medicine at any time during the academic year are required to file a letter of resignation with the dean. In addition, an Application for Withdrawal form bearing the proper signatures must be filed with the office of records and registration. The student must satisfy the authorities that he or she has no outstanding obligations to the school and must return his or her student identification card.

If the above procedures are not completed, the student will not be entitled to honorable dismissal and will forfeit the right to any refunds to which that student would otherwise be entitled. The date used in computing refunds is the date the application for withdrawal is signed by the dean.

ACADEMIC STANDING

Students who voluntarily withdraw during an academic semester will be given no credit. Students are not permitted to resort to withdrawal in order to preclude current or impending failures. Their standing on withdrawal will be recorded at the Office of Records and Registration. Students who withdraw from the medical school and later desire readmission must apply to the Committee on Admissions unless other arrangements have been made with the dean's written consent.

REFUNDS

Refund requests of students officially withdrawing from the school must be processed through the campus office of records and registration. The amount of tuition and fees to be refunded to the student is dependent on time completed in the relevant semester.

In accordance with federal regulations, there are two refund policies in effect at the University of Maryland, Baltimore.

I. First-time students

   A. Students who have registered and are attending UMB for the first time; i.e., who have registered for their first semester on this campus, and withdraw on or before the sixty percent point of enrollment (e.g., during or before the ninth week of a fifteen-week semester) will be refunded according to the required pro rata formula. (After the sixty percent point in the semester, no refund is due the student)

   B. Pro rata refunds require the university to return an amount proportional to the portion of the enrollment not yet completed by the student. In the case of uneven portions of enrollment remaining, the refund is rounded down to the nearest ten percent. Any unpaid charges are deducted from the refund amount. If the student has received aid for the semester, the aid is repaid first; any remaining balance goes to the student.

II. All students not first-time

   A. Students not enrolled in their first semester are eligible for refunds upon withdrawal according to the following schedule:

      - Withdrawal on or before the first scheduled day of class; 100% refund and cancellation of registration
      - Withdrawal after the first scheduled day or class through 10% of the semester — 90% refund
      - Withdrawal after the first 10% through the first 25% of the semester — 50% refund
      - Withdrawal after the first 25% through the first 50% of the semester — 25% refund
      - Withdrawal after the first 50% of the semester — No refund

Schedules indicating the cut-off dates each semester for every level of refund will be made available by the office of student accounts.

B. Withdrawing students who received financial aid to pay for the tuition and fees assessed will have refunds returned to the aid program from which the charges were paid in the following order:
Federal SLS Loan
Federal Unsubsidized Stafford Loan
Federal Subsidized Stafford Loan
Federal PLUS Loan
Federal Perkins Loan
Federal Pell Grant
Federal Supplemental Education Opportunity Grant
Institutional Loans, HPSL, etc.
Maryland State Scholarship Programs
Institutional Scholarship Programs
Private Scholarship Programs
   - Refund amounts over and above those amounts repaid to the various aid programs will be returned to the student
   - In calculating the federal refund, any unpaid charges owed by the student will remain as the student's responsibility and will not be covered by any federal aid received

Additional Notes:

- Aid that has been awarded and certified before the withdrawal date may be used to pay required tuition and fees, even if it has not yet been disbursed
- Federal Financial Aid recipients who cease to attend classes without officially withdrawing through the office of records and registration will have an unofficial withdrawal date determined for them by the financial aid office on a case-by-case basis, and that date will then be used in calculating the refund

LEAVES OF ABSENCE

Students who are in good standing may be granted a one-year leave of absence on request of the dean. Longer leaves can be arranged only under special circumstances with the exception of those students in the combined MD/PhD program.

REQUIRED EQUIPMENT

Dissecting Instruments: At the beginning of the first year, all freshmen must possess a complete set of dissecting instruments similar to those on display at the campus bookstore.

Laptop Computer: Entering freshman medical students will be required to purchase/lease a laptop computer from the University of Maryland. Information regarding specific system requirements and purchasing, leasing and financing options will be provided in June each year. Students are advised not to purchase a laptop computer outside the University.

Microscope: Microscopes will be provided by the medical school.

Other Equipment: By the second year, medical students are required to have an ophthalmoscope, otoscope, a blood pressure cuff.and stethoscope. The estimated cost of these items, plus other essentials such as lab coats, is $400 to $450.

FINANCIAL ASSISTANCE

The School of Medicine's financial aid program is available to medical students who demonstrate financial need. Aid programs are centrally administered by Student Financial Aid, located in the Baltimore Student Union. To qualify for aid, students must apply annually and continue to meet certain eligibility requirements. To apply for financial aid, complete a Free Application for Federal Student Aid (FAFSA) and send it to the Federal Processing Center. To obtain an application, call or visit the Office of Student Financial Aid.

Student Financial Aid
University of Maryland, Baltimore
621 West Lombard Street BSU Room #334
Baltimore, Maryland 21201
410 706-7347
Email: aidtalk@umaryland.edu

Aid packages often include a combination of loans, grants, scholarships and part-time employment designed to meet a student's need. In addition to school resources, outside funding agencies make financial assistance available to qualified medical students. Priority filing date is March 15.

Student assistance is awarded on the basis of demonstrated financial need. Eligibility for financial aid is dependent upon the student maintaining satisfactory academic progress. When determining the amount to be awarded, the following are considered: (1) income, assets and resources of the student; (2) support available to the student from non-university sources and (3) the costs reasonably necessary for full-time attendance at the school. Some programs also consider income, assets and resources of the student's parents.

UNIVERSITY AND MEDICAL SCHOOL FUNDS

University Grants: Preference is given to Maryland residents.

Dean's Scholarship: Funds provided by the school are awarded primarily to non-resident students.

Medical Alumni Association: Interest-free loans are available to students on the basis of financial need.

Private and Endowment Funds: From bequests and private donations, the School of Medicine has established private and endowment accounts to provide fellowships, scholarships and loans for students on the basis of their academic achievement and financial need. The amounts of these fellowships, scholarships and loans vary and are awarded on an annual basis in accordance with school policy.

The availability of support from each of the funds listed below is dependent upon the income generated. Moreover, since many of the funds are governed by specific provisions set forth by the donors, awards must be made accordingly.

Scholarships

APPM Auxiliary Scholarship
Balder Scholarship Fund
James E. Bond Memorial Fund
Dr. Robert W. Buxton Scholarship
Percy M. Chaimson Scholarship Fund
Israel and Cecilia E. Cohen Scholarship
Dr. William H. Crim Scholarship
Isaac C. Dickson Scholarship Fund
Dodge Fund
Marcia Thomas Duncan Medical Scholarship
A. Lee Ellis Scholarship
Arthur Wright Erskine Scholarship
Dr. John E. Esnard Endowment
Sharon Fox Scholarship
Samuel Leon Frank Scholarship
Milton Ginsberg Scholarship Fund
Harry Gudelsky Fund
Horace Bruce Hetrick Scholarship
Margaret A. Hicks Scholarship
Charles M. Hitchcock Scholarship
Donald J. Hobart Scholarship
G. D. Jackson Scholarship
Leo Karlinski Scholarship
Elsie Larrimore Scholarship
Emmett and Ruth Light Scholarship

Dr. Alex J. and Clara Maysels Scholarship
Dr. James N. McCosh, Jr. Memorial Scholarship
Nataro Family Scholarship Fund
Frederick and Anne Nichols and Edwina Justin Fund
Henry Rolando Scholarship Fund
Morton and Elaine Schwartz Scholarship
David Street Memorial Scholarship
Dr. Charles Robert Thomas
Michael Vinciquerra Trust Scholarship
Clarence and Geneva Warfield Scholarship
Walter N. Winters Scholarship
Randolph Winslow Scholarship
W. R. Winslow Residency Trust
Henry Zoller, Jr. Scholarship
Class of 1969 Scholarship Fund

Loan Funds

Balder Foundation Fund
Class of 1916 Memorial Loan Fund
Class of 1935 Student Loan Fund
Jay W. Eaton Loan Fund
Dr. Wetherbee Fort Loan Fund
Gold-Steinberg Memorial Loan Fund
Isaac Gutman Loan Fund
Sean Peter Houlihan Memorial Fund
Robert Wood Johnson Foundation Loan Fund
W.K. Kellogg Loan Fund
William and Sarah Kraut Loan Fund
Michael H. Lipman Loan Fund
Joseph Lipskey Loan Fund
Jacob B. and Shirley K. Mandel Loan
Drs. Charles W. and Kathleen R. McGrady Student Loan Fund
Medical Alumni Association Student Loan Fund
Edward and Lina Meirhoff Loan Fund
Dr. William B. Rogers Student Loan Fund
Jessie Smith Noyes Loan Fund
Charles Pfizer Loan Fund
Dr. F. Mason Sones Jr. Memorial Student Loan Fund
Webster M. Strayer Loan Fund
Jimmie Swartz Foundation Loan Fund
Jay Whitman Memorial Student Loan Fund

OUTSIDE SOURCES

Central Scholarship Bureau offers interest-free loans in amounts up to $3,500 per year (maximum total of $8,000) to qualified Baltimore City and Baltimore County residents.

c/o #108 Bristol House Apartments
4001 Clarks Lane
Baltimore, Maryland 21215
(410)358-8668

Primary Care Loans may equal tuition plus $2,500 annually. Interest accrual at 5 percent and principal payments are deferred until one year after graduation at which time both interest and principal payments begin. Both interest and principal may also be deferred for internships and residencies and for up to three years of service in the uniformed services (including National Health Service Corps) and the Peace Corps. Interest accrues from beginning of repayment period. Recipients must enter and complete a residency training program in primary health care no later than four years after graduation from the institution. Recipients must also practice primary health care until the loan is repaid in full and provide annual certification that they are practicing primary health care. Primary health care is defined as family medicine, general internal medicine, general pediatrics, preventive medicine or osteopathic general practice.

Maryland State Scholarship Administration offers one-year Maryland Professional School Scholarships of $200-$1,000, which can be sought for subsequent years by proper reapplication. Senatorial and House of Delegates awards are also available. To apply, students should complete the Federal Renewal Free Application for Federal Student Aid or the Free Application for Federal Student Aid.

The Maryland State Scholarship Administration also awards Maryland Family Practice Scholarships. These awards are for students enrolled in the School of Medicine, University of Maryland, Baltimore, and pursuing a Doctor of Medicine degree. A recipient must have been a Maryland resident for five years, have definite financial need and be willing to enter the general practice of medicine serving the state of Maryland in an area of need (bond required). These $7,500 per year awards continue for up to four years and no renewal application is required.

National Medical Fellowships are need-based awards to minority medical students. For further information and applications write:

National Medical Fellowships
250 West 57th Street
New York, New York 10019

Federal Work-Study Program: provides jobs for students who need financial aid and who choose to earn part of their educational expenses. Jobs are arranged either on or off campus with a public or private nonprofit agency. Eligible students may be employed for as many as 20 hours per week. To be eligible for Federal Work-Study a student must apply for financial aid and demonstrate financial need.

Federal Perkins Loans (formerly known as National Defense/Direct Student Loans) are made by the university to students. The aggregate legal loan maximum is $30,000 (including undergraduate borrowing). The annual interest rate is 5 percent. Interest does not accrue until repayment begins.

Federal Subsidized Stafford Loans (formerly Guaranteed Student Loans) are made by private lenders. The annual legal loan maximum for graduate students is $8,500. The aggregate loan limit is $65,500 including graduate and undergraduate debt. Current interest rate for new borrowers will be variable, but not higher than 8.25 percent. Interest does not accrue until repayment begins.

Federal Unsubsidized Stafford Loans are made by private lenders. Students may borrow up to $10,000 a year with an aggregate limit of $73,000. The interest rate is variable and will be adjusted annually, with a 8.25 percent cap. Interest will accrue on the loan from the date of disbursement and may either be paid quarterly, annually, or will be capitalized.

Alternative Loans are designed to meet the remaining student's eligibility after both Federal Subsidized and Unsubsidized Stafford Loans have been borrowed. Alternative loans are credit based. Students are strongly encouraged not to borrow this loan unless absolutely necessary.

Federal regulations governing financial aid are subject to change, and it is suggested that interested applicants contact the Financial Aid Office to ensure having the most recent information.

Academic Information

ACCREDITATION

The University of Maryland, Baltimore is accredited by the Middle States Association of Colleges and Schools. The School of Medicine is accredited by the Liaison Committee on Medical Education, the accrediting body for the Association of American Medical Colleges and the American Medical Association.

GENERAL RULES

The University of Maryland School of Medicine authorities reserve the right to make changes in requirements for admission, curriculum, standards for advancement and graduation, fees and rules and regulations.

Matriculants are required to accept the provisions of the Judicial Board and agree to assume its obligations prior to registration.

Students who report for classes later than one week after the scheduled time will be permitted to begin work only by permission of the dean. Attendance at all scheduled classes is expected.

Notice of change of address should be submitted promptly to the dean's office and to the office of the registrar.

All new students, whether they are admitted to the first-year class or with advanced standing, are expected to attend an orientation for new students.

GRADES AND PROMOTION

Final grades for courses in all four years are recorded as follows unless otherwise specified by course director:

A	Excellent
B	Very Good
C	Satisfactory
D	Unsatisfactory — "D" grades are remediable only by examination or other appropriate remediation with a maximum grade of "C" possible on the portion of the course remediated. The final grade will be determined by the coursemaster.
F	Fail — requires repeat of the course or an approved equivalent.
Inc	Incomplete — This designation is used only when mitigating circumstances exist; e.g., illness or unavoidable absence has prevented the student from completing the course on time. It is to be viewed as a non-prejudicial

entry on the student's record; the grade "Inc" remains on the official student transcript.

An award of "Honors" is given to a student who receives a final grade of "A" and performs at a clearly outstanding level and/or who performs an additional scholarly effort. Specific criteria for honors are determined by the coursemaster or course committee.

Other grading policies by specific courses such as Pass/Fail grading are announced to the class at the beginning of the course.

In addition to the final objective grade and the "Honors" category, the student's overall performance is evaluated subjectively. The new curriculum, with added small group activities and problem-based learning groups, allows for such assessment in the basic science years. Clinical years' activities are in small groups with close mentoring. A passing grade in any course may be contingent upon a certain level of attendance and participation above and beyond examination performance. Appropriate evaluation forms are designed for this purpose.

Established rules for advancement and dismissal during all four years have been approved by the faculty and student body representatives of the School of Medicine Council. All regulations related to grading, advancement and dismissal are included in the Academic Handbook given to all entering students at orientation.

The faculty reserves the right to determine whether a student may withdraw, repeat, advance or graduate on academic or moral and personal grounds, including traits of character.

EQUAL OPPORTUNITY

The University of Maryland, Baltimore is actively committed to providing equal educational and employment opportunity in all of its programs. It is the goal of the university to assure that women and minorities are equitably represented among the faculty, staff and administration of the university, so that its work force reflects the diversity of Maryland's population.

All employment policies and activities of the University of Maryland, Baltimore shall be consistent with federal and state laws, regulations and executive orders on nondiscrimination on the basis of race, color, religion, age, ancestry or national origin, sex, sexual orientation, handicap, marital status and veteran status. Sexual harassment, as a form of sex discrimination, is prohibited among the work force of the university.

UNETHICAL CONDUCT

In order to matriculate and/or graduate, students must be of good moral character, consistent with the licensure requirements of the state of Maryland for physicians, and must demonstrate character traits consistent with competent performance as a physician. The school reserves the right to dismiss or fail to graduate any student whose actions or overall academic performance, including clinical performance, do

not demonstrate good moral character and ability to function effectively as a physician. Such action may be taken notwithstanding a student's compliance with standards for advancement and graduation set out in the School of Medicine grading policy.

GRADUATION RATE

Ninety-five percent of the students enrolled in the School of Medicine complete their course of study within the four-year period; 2-to-3 percent complete their course of study within the maximum five-year period. These figures represent those students actively pursuing their MD degree. They do not include those students in the MD/PhD track (usually six years) or those students who are granted a year off to engage in research, etc.

SALARY AND EMPLOYMENT INFORMATION

A high percentage of graduates enter the practice of medicine after completion of residency training. There appears to be a moderate excess of physicians in some disciplines of medicine and in some geographic areas. However, the overall need for persons holding the MD degree is such that all graduates of the School of Medicine may expect a satisfactory income.

PRIZES AND AWARDS

- American Medical Women's Association Scholarship Achievement Awards
- The Elijah Adams Award for Excellence in Biological Chemistry is presented to the freshman medical student who has achieved an honors grade in the biochemistry and molecular biology course and has written a paper judged of the highest quality by the faculty of the department.
- The Wayne W. Babcock Award for Excellence in Surgery is awarded to a graduating senior for outstanding performance in surgery.
- The Balder Scholarship Award for Outstanding Academic Achievement is presented to the graduating senior with the highest academic record throughout the medical course.
- The Leslie B. Barnett Memorial Medical Student Research Fellowship is a competitive award for the support of a student to perform research.
- The Eugene Sydney Bereston Award for Excellence in Dermatology is awarded to the graduate with outstanding accomplishments and interests in dermatology.

- The J. Edmund Bradley Award for Excellence in Pediatrics recognizes the graduate with both the leading academic record in pediatrics and the characteristics most admired in a pediatrician.

- The Eugene B. Brody Award for Excellence in Psychotherapy honors a graduate with outstanding skill in psychotherapy.

- C. Jellef Carr Award for Excellence in Pharmacology is presented to the sophomore medical student who has achieved an honors grade in the medical pharmacology course and has written a paper judged of the highest quality by the faculty of the department.

- The Louis, Ida and Samuel Cohen Award for Personal Attributes of Scholarship, Ability and Compassion for Patients is presented to a graduate with superior scholarship and scientific knowledge of internal medicine and understanding and compassion for patients.

- Dean's Award for Excellence in Research is presented to the graduating senior who has performed the most notable research during the course of the standard MD program.

- The Donaldson Prize for Excellence in Pathology honors the graduating senior who has demonstrated excellence in didactic and laboratory work in the discipline of pathology.

- The Louis Harriman Douglass Award for Excellence in Obstetrics and Gynecology recognizes the graduating senior with an outstanding academic record and a particular interest in obstetrics and gynecology.

- The Robley Dunglison Award for Excellence in Preventive Medicine honors the graduating student who has demonstrated outstanding competence in the fields of preventive medicine and public health.

- The Society for Academic Emergency Medicine Award for Excellence in Emergency Medicine recognizes the senior who has captured the essence of the ideal emergency physician by demonstrating high skill, equanimity and kindness in an environment which requires quick, clear thinking and action.

- Faculty Gold Medal for Outstanding Qualifications for the Practice of Medicine honors a graduate with outstanding scholarly accomplishments and those qualities of humanity and dedication most desirable in a physician.

- The Jacob Finesinger Award for Excellence in Psychiatry honors the graduate who has demonstrated outstanding skills in general psychiatry.

- The Harlan I. Firminger Award for Excellence in General and Systemic Pathology is presented to the student with the highest performance in the sophomore pathology course.

- The A. Bradley Gaither Memorial Award for Excellence in Genito-Urinary Surgery recognizes the graduate who excelled during the senior clerkship in genito-urinary surgery.

- The Geriatrics and Gerontology Education and Research Program Award for Excellence in the Field of Aging recognizes a professional undergraduate or graduate student who has demonstrated outstanding interest and commitment to the care of older persons.

- The Doctor Sheldon E. Greisman Award is presented to the student whose performance in the first-year physiology course is deemed outstanding.

- The William Alexander Hammond Award for Excellence in Neurology is awarded to the graduating senior with outstanding accomplishments in neurology.

- The Doctor Martin Helrich Prize for Excellence in Anesthesiology recognizes the graduate with the highest academic distinction during the senior clerkship in anesthesiology.

- The Doctor Leonard M. Hummel Memorial Award for Excellence in Internal Medicine honors a graduate with outstanding qualifications in internal medicine.

- The Edward J. Kowalewski Award for Excellence in Education and Training in Family Practice is presented to the fourth-year student who has demonstrated special interest and high academic achievement in family practice.

- The Abraham Lilienfeld Award in Epidemiology and Biostatistics is awarded to the graduating student with an outstanding performance in the courses given by the department in the first two years of medical school.

- The Doctor I. Earl Pass Memorial Award for Exceptional Proficiency in Internal Medicine recognizes a member of the graduating class with an outstanding performance in medicine.

- The Doctor Milton S. Sacks Award in Hematology is awarded to the graduate with the most distinguished record in hematology.

- Student National Medical Association Service Award is presented to the graduating senior who has demonstrated leadership in the Student National Medical Association and made outstanding contributions to the minority community.

- Summa, Magna and Cum Laude Awards of Honor are presented to those candidates for graduation who have exhibited outstanding qualifications for the practice of medicine during their four academic years.

- The Uhlenhuth Award for Excellence in the Anatomical Sciences is awarded in recognition of the graduate with the highest academic record in the anatomical sciences.

- The Rudolf Virchow Award for Research in Pathology is awarded to graduates who have made outstanding contributions to research in the field of pathology.

- The Joseph E. Whitley Award for Academic Excellence in Radiology.

- The Hans R. Wilhelmsen Prize for Outstanding Achievement in Surgery is awarded to the graduate with the highest academic record in surgery.

- The Charles L. Wisseman Jr., Award for Excellence in Microbiology and Immunology is presented to the student with the highest academic record in microbiology.

- The Theodore E. Woodward Prize in Internal Medicine is the highest award in internal medicine. It is presented to the graduate who has an excellent academic record in the discipline of internal medicine and has displayed the attributes of compassion and dedication in the care of patients.

- The Theodore E. Woodward Award in Physical Diagnosis awarded at commencement to the graduate whose sophomore performance in physical diagnosis best exemplified the desirable combination of factual information, clinical skills and humanity, and characteristics of an accomplished physician.

- The William D. Kaplan, M.D. awarded at commencement is presented to a graduating senior who best combines humanism with the clinical study of medicine.

- The William H. Mosberg, Jr., M.D. Award for Neurosurgery awarded at commencement to a student who demonstrates academic excellence as well as personal distinction.

- The Dr. Jeremy Hallisey Prize awarded at commencement to graduating students pursuing a career in anesthesiology who best demonstrate the quality of compassion. Provided no graduating seniors pursuing a career in anesthesiology, the prize shall be awarded to graduating seniors pursuing a career in surgery who best demonstrates the quality of compassion.

GRADUATION WITH HONORS

Grade point averages (GPA's) are computed in this medical school only for two purposes: nomination of students for election to Alpha Omega Alpha Honor Society (AOA) and for determination of commencement honors. GPA's are not made public or reported to residency programs. The GPA is calculated on a scale of 1-to-5 with 1 = C, 3 = B and 5 = A. The third year is given a somewhat higher weighting than the first two years for purposes of determining commencement honors. Although grades of Honors are not computed into the GPA, students must have a minimum number of honors grades on their transcript in order to be eligible for graduation with honors. Grades from courses taken during the senior year are not counted numerically in determination of graduation honors. The criteria for determination of students who are to graduate with honors are as follows:

Level of Honors	Minimum GPA	Minimum Number of Honors Grades
summa cum laude	4.65	5
magna cum laude	4.40	3
cum laude	4.20	2

PROFESSIONALISM IN MEDICINE

As changes in our Nation's healthcare and healthcare delivery systems continue to occur, professionalism in medicine is increasingly debated. There are some who say that physicians are losing their professionalism in our highly technical and managed care environment. Medicine has gone through a dramatic transformation over the last four decades. Science has raced ahead with astonishing speed to close in on some of the fundamental mysteries of life.

With the advancement of technology and changing market forces, medicine has become complicated and somewhat institutionalized. The health care marketplace is pressuring physicians to cut costs, increase productivity and support the bottom line. The primacy of the patient-physician relationship is being sorely tested. We will emphasize the importance of professionalism in our medical school curriculum to ensure that all students understand professionalism and accept its obligations. Developing effective physician/patient relationships will become of paramount importance. Now we even struggle with definitions of what is a profession? James M. Gustafson described a profession as follows:

- A profession is characterized by mastery of an extensive body of technical knowledge and concepts or theories that explain that knowledge and guide its applications to different circumstances,

- Professions are institutionalized, and thus there are many social controls over professional activity and,

- Professions are service oriented. They exist to meet particular human needs of individuals and communities.

One of Abraham Flexner's concepts of professionalism, paraphrased by Dr. Richard Foa was "profession will tend to exist or 'be contrived' to achieve societally defined goals rather that to serve the self-interests of its members. Professions are to be 'increasingly altruistic in motivation.'"

Students must be prepared to deal with all the competing forces of a rapidly changing health care system, and demonstrate the qualities of professionalism during medical school and throughout their careers. It must be clear that we are committed to the best outcome for the patient. Each student must be constantly on guard to protect, defend and advocate for patients. The common ground on which all physicians must stand is that the needs of our patients must come first and foremost.

Each year we hold a White Coat Ceremony, where first-year medical students receive their white coats, as a symbol marking the beginning of their new role as a medical healer and emphasizing the responsibility they are accepting for the care and healing of patients. We constantly re-enforce the importance of professionalism, and remind ourselves that as physicians we are granted extraordinary powers by patients and by society.

Program of Study

Broadly stated, the educational objectives of the School of Medicine are:

- To educate students intensively and broadly in medicine and in the science of medicine. To equip students to engage in a lifetime of learning in order that they may successfully adapt to the changing environment and achieve a high level of professional competence and social awareness.

- To provide opportunities for students at every level of training to pursue areas of special interest for intellectual stimulation and/or career advancement.

- To encourage the development of highly competent primary care physicians, specialists and scholars in basic and clinical research and academic administration.

CURRICULUM

First and Second Years: The freshman year begins with a one-week block on "Informatics" introducing students to the use of information technology in medicine that will assist learning, research and clinical applications. This is followed by a nine-weeks block on "Structure and Development" which offers a comprehensive overview on the morphological and developmental organization of the body. Next comes a one-week "Human Behavior" block taught in an interdisciplinary manner, highlighting the importance of behavior in the prevention, incidence, prevalence, diagnosis, treatment and prognosis of wellness and illness. Following this another nine-weeks block, "Cell and Molecular Biology," presents the fundamentals of biochemistry, cell biology, molecular biology and human genetics and correlates them with clinical issues. Next is a two-weeks block of "Cell Function" which is an introductory block for the two blocks that follow. This two-weeks block will be incorporated into the final block relative to examination. Next is a six-weeks interdisciplinary course on the "Neurosciences" describing basic concepts of neuroanatomy, neurochemistry, neurophysiology and clinical neurology. The final block, "Functional Systems," runs for eight weeks, providing the freshman student with the basic understanding of human physiology in the areas of cellular, cardiovascular, renal, respiratory, gastrointestinal, endocrine and integrative physiology. Each is integrated with clinical applications.

Running concurrently with the blocks is ICP, "Introduction to Clinical Practice." Following lectures, one-third of the students visit a clinical site or alternate learning area one day per week for ICP. This clinical work is offered three times each week, once for each third of the class.

Problem-based learning sessions, utilizing small groups, are held once weekly for a total of two hours. Sessions run concurrently with each block. The remainder

of the week is designated for student independent study, for utilization of library, Computer Learning Center or faculty mentor when indicated.

A standing Curriculum Coordinating Committee, composed of department chairpersons, special course chairpersons, faculty members-at-large and representatives of the student body, has the responsibility of regularly monitoring and reviewing the curriculum and recommending changes deemed appropriate.

The integrated curriculum continues in the second year when sophomore students take two blocks which include; 1) Host Defenses and Infectious Diseases (10 weeks); and 2) Pathophysiology and Therapeutics (24 weeks). The more lengthy block, known as Pathophysiology and Therapeutics, contains neuroscience and psychiatry, cardiovascular, gastrointestinal, reproductive, pulmonary, renal, endocrine, neoplasia, locomotive and hemopoietic sections. The sophomore year is characterized again by two hours of lecture, two hours of small group or laboratory, independent and problem-based learning sessions and clinical practice and physical diagnosis.

Third and Fourth Years. The two clinical years are viewed as a single unit with the student assuming progressive responsibility for patient care. The clinical experience consists of the following clerkships: Medicine (12 weeks), Surgery (8 weeks), Family Medicine (4 weeks), Obstetrics, Gynecology and Reproductive Sciences (6 weeks), Pediatrics (6 weeks), Psychiatry/Neurology (8 weeks) plus a four-week elective. As noted, students take all of these rotations according to individual schedules. The sum of these experiences provides a 48-week introduction to clinical science.

The 36-week block that follows includes a 16-week elective period when the student may take eight weeks of electives off-campus. An additional eight weeks must be spent in a student internship in one of four clinical fields: medicine, surgery, pediatrics or family practice. Here the student has an opportunity for primary patient care responsibility over a prolonged period of time. These rotations are offered at the University of Maryland Medical System and in approved affiliated hospitals. The third segment is a consecutive eight-week experience in an ambulatory setting. These outpatient settings include internal medicine, pediatrics and family practice, with additional experience in clinical preventive medicine. Four weeks of surgical subspecialties are also scheduled in the senior year. Attendance in all course work in clinical areas is mandatory. The current clinical curriculum frequently involves weekend attendance. The student may audit available electives in any additional free time.

During the third year, one-half day per week will be allotted to longitudinal ambulatory education. This primary care experience will occur in the offices of general internists, family practitioners, pediatricians and obstetrician-gynecologists. The experience will occur concurrently with the required third-year clerkships. Students will be with the same physician over the one-year period. The course will expose the student to the principals of primary care and preventive medicine, including evaluation of patients with undifferentiated problems, longitudinal care and continuous care.

The 80-week combined clinical years program provides a strong grounding in clinical science with a progressive opportunity for primary patient care responsibility. The

curriculum is designed to prepare the medical student for the increasing responsibility demanded by the specialty residency programs adopted throughout the country.

CURRICULUM AT A GLANCE

Curriculum Organization

Year I **37 weeks**

COURSE	TITLE
I (1 week)	**MEDICAL INFORMATICS** **Participating departments/divisions:** Dean's Office and the Office of Medical Education, UMB Information Services and the Health Sciences and Human Services Library, the Departments of Anatomy and Neurobiology, Psychiatry and Diagnostic Radiology, the University of Maryland Medical System and the Baltimore Veterans Administration Medical Center, selected UMB faculty and guest speakers **Areas of Study:** Computing, Electronic Resource Databases, E-mail, Information Management, Internet, Hospital Systems, UMB Network, Virtual Reality, Computer Technology in Research Applications and Clinical Medicine
II (9 weeks, 2 days)	**STRUCTURE AND DEVELOPMENT** **Participating departments/divisions:** Anatomy and Neurobiology, Diagnostic Radiology, Surgery **Areas of study:** Human gross anatomy, embryology and histology
III (1 week, 2 days)	**HUMAN BEHAVIOR** **Participating departments/divisions:** Psychiatry, Medicine, Pediatrics **Areas of study:** Integrates information about human behavior from the biological, behavioral, and social sciences as it applies to health, illness, and treatment across the lifespan in our multicultural environment. Emphasis is on defining different influences on individuals and physicians as they face or treat different types of illnesses and on common problems at the interface of behavior and medicine: addictions, loss and bereavement, pain, sleep, AIDs, cancer, trauma, and stress-related problems.

COURSE	TITLE
IV (9 weeks, 2 days)	**CELL AND MOLECULAR BIOLOGY** **Participating departments/divisions:** Biochemistry and Molecular Biology, Medicine, Human Genetics, Anatomy and Neurobiology, Pharmacology and Experimental Therapeutics **Areas of study:** Protein structure and function, cellular metabolic pathways, cell signal transduction, cell microanatomy, human genetics, molecular biology
V (2 weeks)	**CELL FUNCTION SECTION OF FUNCTIONAL SYSTEMS BLOCK** **Participating departments/divisions:** Physiology, Biophysics and the Interdisciplinary Neurosciences Departments and Biochemistry and Molecular Biology **Areas of study:** Cell membrane, physiology and dynamics which are basic to the understanding of both neurosciences and functional systems
VI (6 weeks, 1 day)	**NEUROSCIENCES** **Participating departments/divisions:** Anatomy and Neurobiology, Biochemistry and Molecular Biology, Internal Medicine, Neurology, Pharmacology and Experimental Therapeutics, Physiology, Surgery **Areas of study:** Development, structure and function of nervous tissues; anatomical organization of CNS; sensory and motor systems; higher functions; concepts in clinical neurology
IHB (2.5 days)	**INTIMATE HUMAN BEHAVIOR (IHB)** Large group sessions include lectures and audiovisual materials related to intimacy and sexuality, followed by discussion of the topics presented and related issues in small groups. Discussions may include such topics as verbal and nonverbal communication, sexuality in the elderly, heterosexual and homosexual relationships, masturbation and sexuality in the handicapped and chronically ill.

COURSE	TITLE
VII (8 weeks, 3 days)	**FUNCTIONAL SYSTEMS** **Participating departments/divisions:** Anesthesiology, Internal Medicine, Neurology, Obstetrics, Gynecology and Reproductive Sciences, Pediatrics, Physiology, Surgery **Areas of study:** Cell, cardiovascular, endocrine, gastrointestinal, renal, respiratory and integrative function
	INTRODUCTION TO CLINICAL PRACTICE (ICP) Course runs through all four years of medical school. During first two years one afternoon each week (2 hours) **Areas of study:** Ethics, nutrition, intimate human behavior, interviewing and physical diagnosis issues, topics relevant to delivery of primary care

Curriculum Organization

Year II **34 weeks**

COURSE	TITLE
VIII (10 weeks)	**HOST DEFENSES AND INFECTIOUS DISEASES** **Participating departments/divisions:** Epidemiology and Preventive Medicine, Medicine, Microbiology and Immunology, Pathology, Pediatrics, Pharmacology and Experimental Therapeutics **Areas of Study:** Immunology, bacteriology, virology, parasitology, mycology
IX (24 weeks)	**PATHOPHYSIOLOGY AND THERAPEUTICS** **Participating departments/divisions:** Anesthesiology, Cancer Center, Dermatology, Diagnostic Radiology, Epidemiology and Preventive Medicine, Medicine, Neurology, Obstetrics, Gynecology and Reproductive Sciences, Pathology, Pediatrics, Pharmacology and Experimental Therapeutics, Psychiatry, Surgery **Areas of study:** Bone, Cardiovascular; Dermatologic, Endocrine, Gastrointestinal; Hematologic; Nervous, Pulmonary, Renal and Reproductive Systems

COURSE	TITLE
	PHYSICAL DIAGNOSIS **Participating departments/divisions:** Medicine, Family Medicine, Pediatrics, Psychiatry, Neurology, Ophthalmology, Obstetrics, Gynecology and Reproductive Sciences **Areas of Study:** Fundamental aspects of history-taking and physical examination Study for Board Exams

COURSES OF STUDY

YEAR I—37 WEEKS

Block I—Medical Informatics (1 week)

Students begin their medical school training with a one-week introduction to medical informatics. Curriculum includes instruction in the access of campus-wide electronic resources and those available via the Internet. Students gain essential computer literacy skills in needed areas. Learning experiences are designed to bring computer relevancy to medical research and clinical applications. Nationally recognized speakers in Medical Informatics present the latest technologies in medicine.

Introductory material from Block II (Structure and Development) is integrated into the Informatics block to demonstrate examples of high technology related to Anatomy, Radiology and Surgery. Students also are introduced to the Bio-Psycho-Social model by Block III (Human Behavior) leaders prior to beginning Problem-Based Learning (PBL) sessions. Computer software applications are introduced to students at the pertinent locations throughout the Year I curriculum.

Participation in PBL sessions requires the application of informatics skills to clinical cases. The formats for this block include didactic lectures, panel discussions, computer laboratory experiences and PBL small groups. (Deborah Finkelsen)

Block II—Structure and Development (9 weeks, 2 days)

A comprehensive overview of the morphological and developmental organization of the human body is provided. The basic concepts of structure as related to function are described in lectures and demonstrations. Study includes all levels from gross morphology to the ultrastructure of cells revealed by electron microscopy. Laboratory facilities for gross examination are provided for dissection, topograph-

ical study, osteology and radiology. Light microscopical laboratories are available for study of histological preparations of human tissue and for correlation of tissues studied at this level with electron micrographs. The course also includes instruction in living anatomy, radiology and clinical correlation. Laboratory instructors include anatomists, surgeons and radiologists. The interdependence between structure and function in the different tissues and organs of the body is emphasized. (Dr. Larry D. Anderson)

Block III—Human Behavior (1 week)

This interdisciplinary block is based on the fact that behavior—including that of patients, physicians and the community—plays a central role in the prevention, incidence, prevalence, diagnosis, treatment and prognosis of illness. Psychiatry, Pediatrics, Medicine faculty emphasize a biopsychosocial understanding of the patient-physician dyad in order to promote students' understanding of how culture, family and individual psychology integrate with biology to influence health, illness (including bereavement) and treatment across the life span. Within this context, the block will help students (1) to acquire an understanding of significant behavioral science concepts relevant to the understanding of human behavior, (2) to define different influences on individuals and physicians as they face or treat different illnesses at the interface of behavior and medicine: addictions, loss and bereavement, pain, sleep, AIDs, cancer, trauma, and stress-related problems, (3) to learn about changes in human behavior over the life cycle and (4) to understand the influences on the physician-patient interaction in different clinical situations. The course is presented in the form of lectures, demonstrations involving physicians, other professionals, patients, and families, and small group sessions, involving case material, to illustrate and discuss critical course concepts. (Dr. Bruno Anthony)

Block IV—Cell and Molecular Biology—(9 weeks, 2 days)

It is clear that, as biotechnology develops, an increasing number of diseases are understood at the cellular and molecular level. Thus, an understanding of biological molecules and their interactions underlies modern medicine and the treatment of diseases. The goal of this course is to present fundamentals of biochemistry, cell biology, molecular biology and human genetics from an integrated multidisciplinary perspective. Further, these molecular principles are correlated with clinical issues throughout the course so that the importance of cell biology in the illumination of the causes of, as well as the strategies for the treatment of many diseases, is clearly revealed.

This comprehensive course presents a concise view of many topics including the basic structure and function of mammalian cells, structure and function of proteins and enzymes, cellular energetics and metabolism, biochemical nutrition, cellular receptors and intracellular signaling. Fundamental principles of modern molecular biology are presented, including DNA structure and function, protein synthesis and the regulation of gene expression. The principles of modern molecular biology are integrated with clinical human genetics to emphasize our rapidly expanding understanding of the role of molecular mechanisms in human disease.

The goals of this course are accomplished through a series of focused lectures complemented by clinical correlation sessions presented by the clinical faculty. In addition, this course includes a major commitment to teaching fundamentals through multiple small group sessions where students learn through problem solving, clinical case studies and through discussion and presentation of the medical literature. (Drs. Giuseppe Inesi and Tina Cowan)

Block V—Cell Function Section of Functional Systems Block—(2 weeks)

An introduction to the study of cellular function. The course begins with the study of general membrane and cellular physiological principles, including diffusion and membrane permeability, osmotic pressure and cell volume changes, electrochemical equilibrium including the Nernst equation and Donnan equilibrium, the origin of resting membrane potentials, active and passive transport processes and epithelial transport. Study then focuses on action potential generations and propagation in excitable tissue like neurons and muscle cells, the structural and functional properties of skeletal muscle including its mechanical properties and excitation-contraction coupling and the pathophysiology of nerve and muscle.

Block VI—Neurosciences—(6 weeks)

The Neurosciences course provides a unified approach to the study of the central nervous system, i.e., fundamental concepts of neuroanatomy, neurochemistry, neurophysiology and clinical neurology are considered in an integrated sequence. The course begins with structural, biochemical and developmental aspects of the brain and spinal cord. Studies of the major sensory and motor systems and consideration of higher neural functions subsequently form the core of the course. Clinical presentations highlight the importance of major neurobiological principles in the hospital and office setting. Methods used include lecture, laboratory and small group discussions, along with self-teaching and self-evaluation units. The course faculty includes members of the departments of anatomy and neurobiology, biochemistry and molecular biology, physiology and neurology. (Dr. Marshall Rennels)

Block VII—Functional Systems—(8 weeks, 3 days)

This block covers the functional aspects of the major organ systems. It provides students with a basic understanding of mammalian and, in particular, human physiology, and lays the foundation for the study of clinical medicine. The subject matter is organized into sections that cover cellular, cardiovascular, renal, respiratory, gastrointestinal, endocrine and integrative physiology. Each section ties together aspects of structure with function and includes discussion of relevant clinical and pathophysiological applications. Conference periods are used for clinical correlations, small group discussions, laboratory exercises and computer-assisted simulations. The curriculum includes problem-solving and problem-based, self-learning sessions. (Dr. Michael Selmanoff)

IHB—Intimate Human Behavior—2.5 days

Sexuality and intimacy are important and sensitive areas of our lives that are often difficult to communicate about for a variety of reasons. When questions or concerns arise, a physician or other health care provider is typically the first person from whom help and counsel are sought. Such concerns may reflect normal developmental changes, the consequences of sexual abuse, questions about one's sexual identity or the effects of illness, injury or medication on sexual performance.

The ability of health care providers to respond to these needs depends heavily on their own level of comfort with these issues. The Intimate Human Behavior (IHB) course provides students with the opportunity to examine and assess their attitudes, feelings and beliefs about various dimensions of intimacy and sexuality so that they will be better able to apply current knowledge about human sexuality and the treatment of sexual problems.

Large group sessions include lectures and audiovisual materials — some of these of a sexually explicit nature — and discussion of topics presented and related issues in small group sessions. Discussions may include such topics as verbal and nonverbal communication, sexuality in the elderly, heterosexual and homosexual relationships, masturbation, alternative life styles, and sexuality in chronically ill and disabled people.

A Pass/Fail grade is assigned based on required attendance at all course sessions and completion of a short written assignment or exam.

Students will be offered the alternative of taking the course over a weekend at another time, probably during the spring semester. Weekend participants may invite their partners to participate if they wish. Partners will be assigned to separate groups. Information about this option will be provided at an appropriate time.

ICP—Introduction to Clinical Practice

Introduction to Clinical Practice runs throughout all four years of medical school. During the first two years the course occupies one afternoon each week and introduces interactive discussions on topics such as ethics, intimate human behavior, nutrition, interviewing and physical diagnosis issues, topic relevant to the delivery of primary care. First-year students learn interviewing and basic physical diagnosis during the scheduled afternoon block at an off-site primary care setting. Sophomore students have this time assigned to the Introduction to Medicine course, a small group, hands-on experience with more sophisticated physical and diagnostic examinations involving internal medicine, pediatrics, neurology and psychiatry. Junior and senior students spend one-half day each week on a longitudinal continuity experience in the same primary care site over the two-year span, allowing both mentoring and continuity-of-care patient experience.

Block VIII—Host Defenses and Infectious Diseases—(10 weeks)

The Host Defenses and Infectious Diseases course is the first course in the second year and is approximately twelve weeks in duration. The course is subdivided into five integrated sections comprised of an introductory section followed by Immunology, Bacteriology, Virology and Parasitology/Mycology. The primary intent of this course is to convey to students the general principles of immunology and to introduce infectious diseases caused by bacteria, viruses, fungi and parasites. Relevant concepts of pathology, pharmacology and epidemiology are integrated into this course. The format for this course will include lectures, small group discussions (coordinated by the Microbiology and Immunology basic science faculty), clinician small group conferences and laboratory and computer-based sessions which will combine some "hands-on" experience with infectious microorganisms as well as demonstrations and self-instructional material. (Dr. Abdu Azad)

Block IX—Pathophysiology and Therapeutics—(24 weeks)

The course of Pathophysiology and Therapeutics provides an interdisciplinary examination of the basic principles of pathology and pharmacology applied to both normal and disease processes and their treatment. This course incorporates basic concepts of cell and molecular biology, epidemiology (as applied to clinical research, health care organization, occupational and environmental medicine) and clinical psychiatry (including psychopathology and various treatment modalities), genetics, microbiology and immunology, and of physiology. The course follows Host Defenses and Infectious Disease, the first 1.5 weeks of which consists of general principles of pharmacology, pathology and epidemiology that are applicable to both courses. The Pathophysiology and Therapeutics course consists of the systematic study of disease processes and their treatment from both a mechanistic and morphological viewpoint. Emphasis is also placed on the mechanism, action and interaction of pharmacologic agents in normal and disease states. The course is divided into several sections: (1) Epidemiology; (2) Neoplasia Concepts / Dermato- and Osteopathology, (3) Peripheral and Central Neuroscience, (4) Gastrointestinal & Pulmonary Systems, (5) Renal System & Hypertension, (6) Cardiovascular & Hematologic Systems, (7) Endocrine & Reproductive Systems, and (8) Occupational Health/Toxicology/Forensic Medicine. The course is complemented by a year-long parallel program of clinical case studies and laboratory exercises utilizing a problem-based approach. The learning format includes a combination of basic science and clinical lectures, small group discussions, clinical-pathological correlations, problem- and case-based learning, laboratory and computer-based sessions. Faculty from most of the departments of the School of Medicine have teaching involvement in this block. (Drs. Jordan Warnick and Gary Plotnick)

Physical Diagnosis

This course assists the medical student in making the transition from graduate student to physician and is part of the foundation upon which the clinical experience of the physician begins to take form. Students learn to master fundamental clinical skills and begin to synthesize the principles learned in the basic sciences with the information derived at the patient's bedside. With careful guidance and instruction students begin to understand the meaning of good patient care, differential diagnosis and appropriate treatment. (Dr. Raymond H. Flores)

STUDY FOR BOARD EXAMS—(5 weeks)

YEAR III—48 weeks

Medicine	12 weeks
Surgery	8 weeks
Family Medicine Clerkship	4 weeks
Ob/Gyn Clerkship	6 weeks
Pediatrics Clerkship	6 weeks
Psychiatry/Neurology Clerkship	8 weeks
Elective	4 weeks

* *Clerkship time frames to be adjusted to equal 48 weeks*

YEAR IV—32 weeks (tentative schedule)

Ambulatory Care	8 weeks
Sub-Internship	8 weeks
Surgical Subspecialties	4 weeks
Electives	12 weeks

COMBINED MD/PHD PROGRAM

TRAINING FOR MEDICAL SCIENTISTS OF THE FUTURE

In modern medicine the battleground for the fight against many diseases is found at the molecular level, on the surface or interior of cells or in the DNA of the human genome. Other important health problems involve complex studies of large populations within our society. Research into the mechanisms of human disease and the factors that maintain and restore human health requires investigators with interests and training in both basic science and clinical medicine.

The goal of the combined MD/PhD Program is to train medical scientists who will become leaders in medical research. To achieve this goal, a flexible program of combined medical and scientific training is provided for students of superior academic and research potential.

RESEARCH ENVIRONMENT

The MD/PhD Program capitalizes on the wide range of basic and clinical science training opportunities that are available on the rapidly expanding campus of the University of Maryland. The program offers PhD degrees in many disciplines including: Anatomy, Biochemistry, Epidemiology and Preventive Medicine, Human Genetics, Microbiology and Immunology, Molecular and Cell Biology, Neuroscience, Pathology, Pharmacology and Experimental Therapeutics, Physiology and Toxicology. In addition doctoral training is offered through interdisciplinary training programs including Neurosciences, Membrane Biology, Muscle Biology, Reproductive Endocrinology, and Toxicology all supported by the National Institutes of Health. A unique strength of the program includes Organized Research Centers that provide outstanding research opportunities for clinical investigators, such as: Center for Vaccine Development, Cancer Center, Institute of Human Virology, Center for Fluorescence Spectroscopy, Nuclear Magnetic Resonance Facility, Environment and Human Health Research Center and the Maryland Biotechnology Institute. Thus, there is an extraordinary range of high quality research programs available to the MD/PhD students.

PROGRAM REQUIREMENTS AND SCHEDULE

Requirements for the combined MD and PhD degrees are equivalent to those of the separate degrees of the Doctor of Medicine (School of Medicine) and the Doctor of Philosophy (Graduate School). The dual degree program can be completed within six-to eight-years.

Although the schedule of training can be flexible, entering students typically complete the two preclinical years as medical students prior to enrolling as full time graduate students. During this initial period the MD/PhD students normally use the pre- and post-freshman summers for research rotations in laboratories of their choice. In addition, during the first year there is an extensive orientation program which provides a detailed view of the diverse research opportunities available. The research rotations and orientation are designed to facilitate the choice of a thesis advisor.

After completion of the pre-clinical years, MD/PhD students enroll for two-to four-years in the PhD program of their choice. During this time they take required graduate courses and complete their dissertation research. Subsequently, students begin the final two years of their medical training which takes the form of a series of clinical clerkships. This program schedule is a general one. A student may complete the combined degree in a different sequence based on an alternative plan developed in consultation with the Advisory Committee.

FINANCIAL SUPPORT DURING MD/PHD TRAINING

All students admitted into the program are awarded a waiver of tuition at the level of a Maryland resident during the medical school years. Supplemental support is

available to pay out-of-state tuitions for a limited number of outstanding non-resident students. During the Graduate School years stipends and tuition remission are awarded to all students through graduate programs and PhD mentors. A limited number of applicants may also qualify for supplemental funds through the "Outstanding Scholars Program" which provides a stipend for the medical school years as well. Students are selected for the Outstanding Scholars Program based on their record of achievement and potential for future development. For current information on stipends, contact the Program Director.

APPLICATION PROCESS

The MD/PhD Program is open to all qualified applicants, regardless of state residence. Applicants to the program are required to meet the admissions requirements of the School of Medicine. Applicants complete and file an AMCAS application, choosing the University of Maryland as one of the schools to receive the application. The secondary application package includes an MD/PhD Program supplemental form which must be completed and returned with the secondary application. Criteria for admission include MCAT scores, the undergraduate/graduate academic records, letters of recommendation and, very importantly, research experience. Applicants are selected for interviews based on the above criteria. Prospective students are interviewed for the MD/PhD Program and the School of Medicine during an initial one-day visit to the campus. Admission to the MD/PhD Program is determined by the MD/PhD Advisory Committee in consultation with the medical school Admissions Committee.

For further information, including details of the specific PhD programs, contact:

Terry B. Rogers, Ph.D.
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Baltimore, MD 21201
(410)706-3990
E-MAIL trogers@schmed01.ab.umd.edu

RESEARCH OPPORTUNITIES

OFFICE OF STUDENT RESEARCH

Medical students are encouraged to become involved in biomedical investigations through participation in supervised research projects offered through the Office of Student Research. The medical student program is supported jointly by a training

grant from the National Institutes of Health and the Office of the Dean. The faculty and administration of the School of Medicine are committed to the training of physician-scientists. The Short Term Research Training Program (STRTP) for medical students strives to enhance the connection between the treatment of patients and the scientific investigations which enable patient care to advance. The physician-scientist who bridges both basic and clinical sciences and clinical practice is therefore in an ideal position to translate research into clinical application and patient problems into laboratory investigation. Currently, research is being conducted in several major areas of interest at the School of Medicine. These include, but are not limited to behavior, cancer, cardiovascular disease, endocrinology, environmental health, epidemiology, infections, immunology, neuroscience, respiration, toxicology and virology. Traineeships are awarded on a competitive basis and currently provide $300 per week for 10-to-12 weeks of full-time participation. These experiences are available to incoming students during the summer before their freshman year, and to medical students generally during the summer after their freshman year. On occasion, awards are made to students during the summer after their sophomore year or to seniors during the academic year.

STRTP funds are not granted to students with doctoral degrees, nor to those who are involved in doctoral dissertation research or who have alternative sources of research funding. However, the program may supplement some alternate sources up to the level of STRTP trainees. Students selected to participate in the program must attend a summer colloquium consisting of research seminars and lectures on the ethical and responsible conduct of research. These students also present their research to fellow students and faculty during the summer at the Student Research Forum and on Medical Student Research Day in the Fall.

Summer research traineeships are also available to under-represented minority high school and undergraduate students to encourage careers in one of the health professions and/or biomedical research. The programs provide students with a realistic understanding of the biomedical research environment through hands-on experience, contact with appropriate role models and application procedures for professional and graduate schools. Positions are available for minority undergraduate students to conduct research for 12 weeks during the summer months at the University of Maryland School of Medicine and at selected sites off-campus. Trainees work under the direct supervision of experienced scientists and receive $250 per week for the 12-week period.

The Office of Student Research serves a dual purpose of providing opportunities for students from middle and high school through medical school to consider the possibility of graduate school, a career in the health professions and/or academic medicine and of specifically increasing the number of under-represented minority students and faculty in those professions. The office also promotes biomedical/behavioral research experiences for K-12 pre- and in-service science teachers. These experiences aid teachers in redefining K-12 curriculum and of informing their students of career opportunities. The Office of Student Research Programs works cooperatively with the Office of the President, the Maryland Collaborative for Teacher Preparation, University of Maryland Graduate Fellows Programs and various high school, MARC and MBRS programs in Maryland and other states to ensure access to research careers and involvement for all who are interested.

Applicants for the minority undergraduate program must be enrolled in an undergraduate school or post-baccalaureate program and be in good academic standing at the time of application. Although minority students from any state may apply, preference will be given to Maryland residents. Potential trainees must not have graduated at the time the traineeship begins and should have a GPA of 3.0 to be considered. It is strongly recommended that applicants have successfully completed courses in biology and chemistry.

The School of Medicine is firmly committed to significantly increasing the number of under-represented minority medical students and faculty and has strong outreach, recruitment and retention programs to attract and graduate minority students who are African Americans, native Americans, mainland Puerto Ricans and Mexican Americans. The school is actively involved in the Association of American Medical Colleges' Project 3000 by 2000, which is designed to increase to 3,000 the number of under-represented minority medical students in all U.S. medical schools by the year 2000. Recruitment, research and academic enrichment activities are provided for under-represented minority students at the high school, undergraduate and medical school levels.

The Office of Student Research also provides funded opportunities for undergraduates and medical students to conduct research abroad at sites in Brazil, Chile, the Dominican Republic, France, Israel, Mexico, the Netherlands, South Africa and the West Indies.

Other opportunities may exist for brief or extended research experiences, either on or off campus. The Office of Student Research maintains a list of those opportunities and also conducts an annual survey of on-campus research opportunities in both clinical and basic science areas that may be available throughout the calendar year. In some cases individual faculty members may have grant funding to support a student.

MEDICAL STUDENT RESEARCH DAY

Alpha Omega Alpha (AOA), the national medical honor society, and the Office of the Dean sponsor a half-day research competition each year. All medical students are encouraged to participate and attend these presentations and, except for those students in the MD/PhD Program, are eligible to compete for $2,000 in prizes.

For further information on research programs contact:

Dr. Jordan E. Warnick
Professor and Assistant Dean
Office of Student Research
685 West Baltimore Street—142 HSF
Baltimore, Maryland 21201
410 706-3026—jwarnick@offsr.ab.umd.edu
Check out our Web Site at: http://www.som1.ab.umd.edu

GRADUATE PROGRAMS

The Graduate School is the largest of the schools on the University of Maryland, Baltimore campus, enrolling more than 1250 students. It offers the MS, MA, and PhD degrees and, in conjunction with the professional schools, the opportunity to complete joint degrees including the MD/PhD and the DDS/PhD Almost 300 graduate students are pursuing studies in departments and programs in the School of Medicine, and among them are about 30 MD/PhD students. They are being trained to conduct the theoretical and applied research that underlies advances in clinical medicine.

PhD students in the School of Medicine are generally provided financial support for the entire course of their studies. This support comes in the form of Graduate Research Assistantships (stipend, tuition remission, and health insurance), provided by the Graduate School and/or by the School of Medicine, during the initial years of study. When a student begins dissertation research, he/she is supported by the research funds of his/her mentor. In recent years research funding to all schools on the campus has increased dramatically, with major support coming from agencies such as the National Institutes of Health, the National Science Foundation, the Veteran's Administration, various agencies of the State of Maryland and the private sector.

Administratively, the Graduate School at the University of Maryland, Baltimore is part of the University of Maryland Graduate School, Baltimore (UMGSB). The UMGSB governs the graduate programs located on both the Baltimore and the University of Maryland Baltimore County (UMBC) campuses, bearing primary responsibility for approval of new courses and programs and admission of faculty to Graduate Faculty status. An advantage of this linkage is increased access for Baltimore campus students to the diverse programs in engineering, computer sciences, and the liberal arts and sciences offered on the UMBC campus, 20 minutes away by car.

In addition to its degree-granting programs, the Graduate School offers informal programs in the ethical conduct of research and a Survival Skills seminar series. The latter aims to provide professional enrichment and addresses topics such as giving a good oral presentation, grant writing and mentor selection. These offerings are open to all students (and faculty) on campus. A Survival Skills Library is located in the office of the associate dean, suite 201, Baltimore Student Union.

The following graduate programs are offered on the University of Maryland, Baltimore campus:

Anatomy and Neurobiology			PhD
Biochemistry*		MS	PhD
Dental Hygiene		MS	
Epidemiology			PhD
Ethics, Applied and Professional*	MA		
Human Genetics			PhD

Marine-Estuarine-Environmental Sciences*			PhD				
Medical and Research Technology			MS				
Microbiology and Immunology					PhD		
Molecular and Cell Biology*				PhD			
Neuroscience and Cognitive Sciences*		MS		PhD			
Nursing			MS		PhD		
Oral Biology			MS				
Oral and Craniofacial Biological Sciences	MS		PhD				
Oral and Experimental Pathology		MS		PhD			
Pathology				MS		PhD	
Pharmaceutical Sciences				PhD			
Pharmacology and Experimental Therapeutics		MS		PhD			
Pharmacy Administration					PhD		
Physiology				MS		PhD	
Preventive Medicine				MS			
Social Work						PhD	
Toxicology*				MS		PhD	

Interdisciplinary programs (indicated in the listing above with asterisks), involving multiple departments on the Baltimore campus or departments on several of the campuses of the University System of Maryland, are becoming increasingly important to the Graduate School. Such programs make efficient use of resources while allowing the school to move quickly into emerging research areas of national importance. At present, interdisciplinary programs in Gerontology, Physical Rehabilitation Sciences and Biomedical Engineering are under development.

Graduate School applications and catalogs can be obtained by contacting:

The University of Maryland, Baltimore Graduate School
621 West Lombard Street, Room 336
Baltimore, MD 21201
410-706-7131.
gradinfo@umaryland.edu

A wide variety of information on the Graduate School, including catalog and application information, can be accessed via the Graduate School web page: http://graduate.umaryland.edu

RESIDENCIES AND FELLOWSHIPS

The office of graduate medical education coordinates and assists in the administration of University of Maryland's programs of resident education and training. The activities of the office include organizing the accreditation process of residency

programs, coordinating the National Resident Matching Program, developing central databases on residents and training programs and serving as institutional liaison for addressing residents' concerns, problems and policies.

Graduate medical education training for residents and fellows is offered in a variety of clinical sites. The majority of clinical training occurs at the University of Maryland Medical System, the Baltimore Veterans Affairs Medical Center and Mercy Medical Center. A network of affiliated community hospitals and ambulatory care centers with significant commitment to the importance of a teaching environment provides much of the variety and depth offered to residents and fellows.

Programs are accredited by the Accreditation Council for Graduate Medical Education (ACGME) comprised of the following member organizations: American Board of Medical Specialties, American Hospital Association, American Medical Association, Association of American Medical Colleges and the Council of Medical Specialty Societies.

Residency positions are filled through the National Resident Matching Program. Participating in the Match are the following programs: preliminary programs in medicine and surgery; categorical programs in diagnostic radiology, emergency medicine, family practice, general surgery, internal medicine, combined program in internal medicine/pediatrics, neurology, obstetrics and gynecology, orthopaedic surgery, pathology, pediatrics, combined program in pediatrics/emergency medicine and psychiatry; advanced programs in anesthesiology, diagnostic radiology and radiation oncology.

Resident and/or fellowship positions are available in the following specialty and subspecialty areas:

Department of Anesthesiology: anesthesiology, critical care, pain management
Department of Dermatology: dermatology
Department of Diagnostic Radiology: thoracic radiology, computed body tomography/ultrasonography/MRI, interventional and vascular radiology, neuroradiology, critical care trauma, musculoskeletal radiology, nuclear medicine
Department of Epidemiology and Preventive Medicine: preventive medicine
Department of Family Medicine: family practice
Department of Medicine: internal medicine, cardiology, clinical electrophysiology, endocrinology, gastroenterology, geriatrics, geographic medicine, hematology/oncology, hypertension, infectious diseases, nephrology, pulmonary and critical care medicine, rheumatology, combined program in internal medicine/pediatrics
Department of Neurology: neurology, neurophysiology and epilepsy, electromyography and neuromuscular, stroke, neurologic rehabilitation, neurophysiology and neuroimmunology
Department of Neurosurgery: neurosurgery
Department of Obstetrics, Gynecology and Reproductive Sciences: obstetrics and gynecology, reproductive endocrinology, maternal fetal medicine, genetics, family planning, gynecologic-oncology, urogynecology

Department of Ophthalmology: ophthalmology, glaucoma, retina ophthalmology
Department of Pathology: anatomic/clinical pathology, anatomic pathology, clinical pathology, neuropathology, immunopathology, forensic pathology, surgical pathology
Department of Pediatrics: pediatrics, adolescent medicine, behavioral and developmental, critical care, endocrinology, infectious diseases and tropical pediatrics, neonatology, gastroenterology and nutrition, human genetics, combined programs in internal medicine/pediatrics and pediatrics/emergency medicine and pediatric medicine
Department of Psychiatry: psychiatry, addiction, child and adolescent psychiatry, geriatric psychiatry
Department of Radiation Oncology: radiation oncology, radiation therapy
Department of Surgery: general surgery, orthopaedic surgery, otolaryngology and head & neck surgery, thoracic and cardiovascular surgery, urology, emergency medicine, pediatric surgery, plastic and reconstructive surgery, surgical critical care and combined program in pediatrics/emergency medicine

Correspondence, applications and residency inquiries should be addressed to the chairperson of the respective department or program in care of:

University of Maryland Medical System
22 South Greene Street
Baltimore, Maryland 21201

PROGRAM OF CONTINUING MEDICAL EDUCATION

The Program of Continuing Education (PCME) of the University of Maryland School of Medicine is accredited by the Accreditation Council for Continuing Medical Education (ACCME) and provides a wide array of continuing medical education (CME) activities. These educational activities assist physicians in the maintenance and enhancement of their clinical competence in order to promote high quality health care for the citizens of Maryland and elsewhere. To assure clinical relevance, activities are designed on the basis of identified educational needs of practicing physicians.

The primary target audience for PCME-sponsored educational activities is Maryland and mid-Atlantic region physicians. Some educational activities, because of their highly specialized nature, are designed for presentation in both national and international settings.

CME offerings consist of courses (one-half-to-five days in length), "hands on" workshops, enduring materials (including self-study programs), and a complex array of clinical departmental and division rounds and conferences. Opportunities for interaction between attendees and presenters are part of all CME activities.

The CME program is administered by the Associate Dean for Graduate and Continuing Medical Education and a full-time staff, with the assistance of a faculty advisory committee. For further information please contact:

Program of Continuing Medical Education
University of Maryland School of Medicine
655 West Baltimore Street—Rm 14-015
Baltimore, Maryland 21201
(410) 706-3956

Resources

OFFICE OF MEDICAL EDUCATION (OME)

The office of medical education serves all departments of the medical school as a consultative by:

- Providing educational support for faculty and students.
- Providing multi-media systems design and hardware installation for medical school education.
- Providing faculty development through instructional techniques, design and evaluation.
- Providing educational resources including audiovisual aids, instructional videotapes and computer software programs.
- Developing and implementing computer-based instructional systems.
- Assisting in the development of special educational programs.
- Assisting in curriculum development and evaluation of curricular programs.
- Providing evaluation of instructional systems and techniques.
- Providing for the operation and maintenance of the Dr. Irving J. Taylor Learning Resources Center and two student computer laboratories.
- Providing audiovisual support services for lecture halls, small group classrooms and special events.
- Providing individual and group tutorials, mock examinations and study skills workshops.
- Providing research in medical education, instructional design, evaluative techniques and educational technology.
- Consulting with faculty and staff of the medical school, as well as the other UMB schools in media production.
- Providing classroom scheduling.

- Coordinating library facilities to include the storage and retrieval of all non-printed educational material and software; operation and maintenance of the Irving J. Taylor Learning Resources Center, the Clinical Media Library and Computer Learning Center.

The office of medical education sponsors academic support services and provides access to several resource facilities. These services are administered by the director of academic development.

These services, administered by the Director of Academic Development, offer a variety of opportunities for students to become more effective, efficient learners. The services include:

The Prematriculation Summer Program (PSP): Prior to the beginning of the academic year, incoming freshmen are invited to take part in a six-week simulation of the first year curriculum. Participants study significant portions of Structure & Development and Cell & Molecular Biology, and are given a brief introduction to Functional Systems; learn to handle medical school's accelerated pace and grasp-of-material demands; gain practice in gross anatomy and histology labs, small group study, and exam-taking; and, refine their study skills and habits to meet the new challenges. PSP is especially designed for students who are at greater risk of not succeeding in medical school; such applicants (e.g., non-science majors or those possessing lower-than-normal MCAT scores and GPA's) are given enrollment preference. Follow-up studies consistently have shown that PSP has had a positive and significant impact on the academic achievement of PSP students. Each year, the program also affords a select group of academically talented sophomores the opportunity to explore academic medicine and sharpen their own academic knowledge by teaching this class of approximately 20 students.

Supplemental Instruction: Individual and small group tutorials are available to all freshmen and sophomores at no charge.

Academic Development Workshops: At various times throughout the year, formal presentations and panel discussions addressing topics of general concern and interest (e.g., time management, active learning, test-taking, and course previews) are conducted.

Academic Counseling: Individual counseling sessions, focusing on problems affecting academic performance and strategies for improvement, are available to all medical, physical therapy and medical technology students.

Academic Monitoring: First- and second-year exam results are reviewed frequently. Students who do not pass an exam or whose results are significantly lower than usual, are invited in for consultation as soon as possible after the poor exam showing. The student works with the director in specifying what went wrong and in fashioning an appropriate remedy. Follow-up contacts provide additional support to the student. The Academic Monitoring Committee meets periodically to

examine the academic progress of all first and second years with particular attention paid to devising interventions for students experiencing difficulty.

Board Preparation: A series of activities assist sophomores in getting ready for the USMLE STEP I. Activities include: gathering and sharing with sophomores the collective wisdom of juniors whom have just taken the boards; offering frequent formal review sessions covering "high yield" exam topics; conducting occasional information-sharing workshops and panel discussions; identifying "at risk" students who may have difficulty with STEP I for special board prep assistance; in individual consultations, structuring study strategies/schedules, answering questions and discussing areas of concern; administering a February mock board which provides students with baseline information as well as giving a "heads up" that the boards are approaching: helping those who must retake the STEP I. Board review books are available for circulation from the Academic Development resource library. By request, assistance also is given to those preparing for the STEP II or the specialty licensing exams.

Research: Ongoing data collection and analysis provide a source of information useful in clarifying the role and interplay of various factors involved in student learning. These qualitative and quantitative data sets are utilized by others conducting research or making curriculum decisions.

Educational Screening/Special Accommodations: Students with learning disabilities or attention deficit disorders receive assistance in minimizing the disability's impact on their academic performance. Students suspected of being LD or ADD, but not previously identified as such, are referred for testing. If the results are positive, the director assists the student in gaining accommodations and adjusting his/her study approach accordingly.

Irving J. Taylor Learning Resources Center and Clinical Media Library: The Irving J. Taylor basic sciences media library provides students with access to many self-instructional materials including videotapes, slide-tapes, computer-assisted instruction, lecture tapes and reference books.

Student Computer Facilities: The office of medical education is responsible for the operation of two student microcomputer facilities: the Computer Learning Center and the Apple Macintosh laboratory. Both of these facilities are part of the Irving J. Taylor Learning Resources Center and are located adjacent to each other on the second floor of the MSTF building. The Computer Learning Center (CLC), located in the Medical School Teaching Facility, is a 20-station MS-DOS microcomputer lab. A 20-station Apple Macintosh Student Computer Laboratory is located adjacent to the CLC. Both of these facilities are available for classroom and individual student use.

The office of medical education maintains the network and provides helpdesk activities to support student laptop computers.

Illustration: Services include comprehensive renderings of surgical and clinical techniques, anatomical renderings, statistical charts and other graphic representations. Additional service includes comprehensive design and finishing of flyers, brochures, programs and posters; and layout and paste-up for offset printing and photographic copying. In addition, they design displays and exhibits.

Photography: Services include photographic copying of flat material such as written matter, x-rays, laboratory tracings and data; photography of specimens, equipment set-ups, surgical, clinical and laboratory activities; and portraits for school-related purposes. The photography laboratory also handles slide duplication, and acts as a collection station for commercial processing of color photography. Computer-developed color slides are a major area of service.

HEALTH SCIENCES AND HUMAN SERVICES LIBRARY

"The library is always one of the first places you look to in order to measure the quality of any institution of higher education. Those who see our new library, from the outside and inside, will have no doubt as to the seriousness of our academic mission. This wonderful building puts us in a leadership position on an international scale"—UMB President David J. Ramsay (March, 1998)

Distinguished as the first library established by a medical school in the United States, the University of Maryland continued its leadership role with the April 3, 1998 opening of the new Health Sciences and Human Services Library.

The new library is the second-largest medical school library on the East Coast. The library has six levels and covers 190,000 square feet (It even has its own coffee lounge). This fully-wired and networked library features 1500 data connections for computer users along with 50 public-access workstations and three computer classrooms. There is seating for 900 individuals in the library. This arrangement includes 130 individual study-carrels and 40 collaborative learning rooms always available to students.

Other new features include a Distance Education Center that in the future will allow students to access educational courses worldwide, electronic access to items placed on "Reserve" by course instructors, as well as electronic access to requests for books, photocopies and interlibrary loans. The library's Center for Innovation in Technology will be a showplace for new products related to health care and medicine.

The Library's Research and Information Commons provides the collective link between numerous electronic databases available to students and the 360,000 volumes in the collection. This includes citation and full-text access to the more than 2300 journal titles the library currently receives.

UMnet is the campus computer network that provides 24-hour offsite (campus computer labs, home or office) access to electronic resources, including many library databases and services, e-mail, Internet and World Wide Web resources. Assistance for computer software applications and resources access through UMnet as well as account registration is provided by the library's Computing and Technology Services (CATS) Department.

All library services are fully supported by a staff of librarians, computing and network support professionals. The staff is available for consultations and instructions as well as assistance in planning for the integration of information skills into curricula and courses.

In addition to serving all the professional schools on campus and the University of Maryland Medical System, the library is a nationally recognized leader in information technology and serves as the Regional Medical Library for the Southeastern United States, Region 2 of the National Network of Libraries of Medicine.

For further information about the library and its services, access the library's web address at: http://www.umaryland.edu/hsl/.

MEDICAL ALUMNI ASSOCIATION

The Medical Alumni Association has served all students, graduates, faculty and staff affiliated with the School of Medicine since 1875.

Located in Davidge Hall, 522 West Lombard Street, the Medical Alumni Association office is open weekdays. Among its many activities, the association coordinates the annual Reunion weekend, publishes the quarterly Bulletin and sponsors an annual social event for each medical school class.

Since the association inaugurated the Annual Giving Drive in 1978, lectures, scholarships and student loans funded by alumni contributions have enriched the programs and goals of the School of Medicine on a daily basis.

AFFILIATIONS

Recognizing the importance of providing excellent clinical experiences with stimulating faculty and mentors, the School of Medicine has developed a comprehensive network of affiliations designed to encompass the continuum of medical care including ambulatory, acute hospital, home care, rehabilitation and chronic care. In all programs medical students are trained by and fully supervised by School of Medicine, University of Maryland, Baltimore faculty.

Over the past five years a significant effort to coordinate, expand and improve the ambulatory care experience has resulted in an extensive ambulatory care network of opportunities. Clinical experiences are offered in multi-disciplinary teaching clinics, faculty practices, community clinics, private practices and hospital-based ambulatory care programs. Model geriatric clinical education programs, designed at three facilities with large cohorts of elderly patients, serve as stimulating educational experiences where computer-assisted learning augments the faculty preceptor patient experience.

Academic tertiary care experience, demonstrating state-of-the-art technology and ongoing exciting clinical research, is offered at the three major affiliates: the University of Maryland Medical System, the Baltimore VA Medical Center and Mercy Medical Center. Additionally, community hospitals with major commit-

ments to the importance of a teaching environment serve as outstanding opportunities for primary and secondary health experiences.

A successful network of community, state and federal psychiatric facilities has resulted in a widely acclaimed statewide program for psychiatry training. Special clinical research experience in psychiatry is additionally offered at the Institute of Psychiatry and Human Behavior and at the Perry Point VA Medical Center.

Experience in rehabilitation, home care and chronic medical care is offered through several facilities, each offering special aspects of expertise for those who wish to pursue psychiatry, neuro-rehabilitation and geriatrics.

The following sites have formal affiliations with the School of Medicine: Baltimore Veterans Affairs Medical Center, Walter P. Carter Center, Children's National Medical Center (Washington), Deaton Medical Center, Franklin Square Hospital, Greater Baltimore Medical Center, Harbor Hospital Center, Johns Hopkins Hospital, James Lawrence Kernan Hospital, Johns Hopkins Bayview Medical Center, Maryland General Hospital, Mercy Medical Center, Montebello Rehabilitation Center, National Orthopaedic Hospital, St. Agnes Hospital, Sinai Hospital of Baltimore, Sheppard and Enoch Pratt Hospital, Springfield Hospital Center, Spring Grove Hospital Center, Union Memorial Hospital, University of Maryland Medical System (includes Shock Trauma and Cancer Center), Western Maryland Area Health Education Center (AHEC) and York Hospital (PA).

THE UNIVERSITY OF MARYLAND MEDICAL SYSTEM

The University of Maryland Medical System is a private, nonprofit health system comprised of University of Maryland Hospital, University of Maryland Greenebaum Cancer Center, the R Adams Cowley Shock Trauma Center and Kernan and Deaton Hospitals. Established in July 1984, the Medical System was previously an agency of the state of Maryland. It is the primary clinical setting for the University of Maryland School of Medicine. It is dedicated to providing exemplary health care for the people of Maryland, to preparing students and physicians-in-training for the practice of medicine and the allied health professions and to carrying out research to improve the quality of health care.

Since its founding in 1823, the hospital has become a major tertiary care referral center that offers the full range of specialized medical and surgical services. In recent years, as the number of health care facilities in urban centers has decreased, the medical system has assumed increasing responsibility for its surrounding community. As a result, more than 100,000 city residents look to the University of Maryland Medical System as their primary source of health care.

With 747 beds and located in the heart of Baltimore's UniversityCenter district, University Hospital is one of the nation's busiest. In one year it records approximately 29,000 inpatient admissions, 200,000 outpatient visits, and 1,500 births. Every day, nearly 5,000 people pass through the hospital's doors. The senior medical staff—more than 600 physicians—is comprised of the clinical faculty of the School of Medicine who supervise training of the more than 400 graduate-physician house staff as well as the medical students.

Because of its combined professional and academic environment, many outstanding treatment programs and research facilities have been developed at the medical center. The R Adams Cowley Shock Trauma Center and the University of Maryland Greenebaum Cancer Center are two prime examples.

The R Adams Cowley Shock Trauma Center, linked with the statewide network of emergency communications, transportation and medical care facilities, is second to none. It provides high-speed emergency service to more than 5,500 critically injured persons each year—the most severe multiple trauma cases in the state—with an impressive 96 percent survival rate. A heliport on the roof of the $44 million R Adams Cowley Shock Trauma Center facilitates rapid transport of the most severely injured and acutely ill patients.

In the Greenebaum Cancer Center, collaboration between research scientists and research clinicians has resulted in notable efforts in treating breast, lung and blood-related cancers. It was at the cancer center that researchers pioneered the freezing of a leukemia patient's own platelets for later use during relapses. The center's physicians work closely with other oncology programs within the hospital, tailoring the balance among surgery, radiation and anticancer drugs for each patient's optimal treatment plan. The cancer center is nationally known for its blood and marrow transplant program and its research into new drug development.

Other centers of excellence include:

- University of Maryland's Hospital for Children, which provides the full range of pediatric services. It houses the state's largest neonatal intensive care unit.

- The solid organ transplant program, which performs more than 300 transplants each year, with capabilities in kidney, pancreas, simultaneous kidney-pancreas, liver, heart and lung. The comprehensive program continually surpasses national survival rates in every area.

- The Maryland Brain Attack Center, where physicians offer new treatments that help prevent disabilities from stroke by rapidly restoring blood flow to save brain tissue. The institution's neurosurgery department has attracted national attention for its innovative techniques used in the treatment of brain tumors. A Gamma knife Center allows patients with inoperable brain tumors a new chance for survival. The center for advanced fetal care, multiple sclerosis and magnetic resonance imaging centers all offer the most advanced technology possible.

- University Sports Medicine provides injury prevention and treatment services to everyone from professional athletes, such as the Baltimore Ravens and University of Maryland Terrapins, to weekend warriors.

- An affiliation with the Institute of Human Virology, where world renown experts led by Dr, Robert Gallo investigate the cures and prevention of chronic viral diseases, with AIDS as a top priority.

Along with its partner, the School of Medicine, the Medical System has met the rapidly changing health care market with expanded services, Its integrated delivery system now offers an array of health services from primary care through long-term nursing care to patients throughout the state, These include:

- Four primary care sites in West Baltimore

- Specialty care in the suburbs including a rehabilitation and sports medicine center in Howard County; midwife offices in Harford and Anne Arundel County; and primary and specialty care at Shipley's Choice in Anne Arundel County.

- University Post-Acute Care Services has facilities to meet the long-term, home and specialty care rehabilitation with the William Donald Schaefer Rehabilitation Center at Kernan, Deaton Hospital, and an ownership interest in the Visiting Nurses Association, the largest home health agency in the state.

The University of Maryland Medical System has grown both professionally and physically over the years. Today, through partnerships with the University of Maryland's professional schools, it is the training site for pharmacists, social workers, dentists, nurses and other health professionals and technicians. This interprofessional environment is a unique and valued characteristic of the University of Maryland Medical System.

Looking ahead to the next century, the Medical System will launch construction of a new 350,000 square-foot building which is presently designed to house components of its emergency services, surgical services, diagnostic imaging, and women's and children's programs. It will stand adjacent to the modern Homer Gudelsky Building for patient care which opened in 1995.

VA MARYLAND HEALTH CARE SYSTEM (VAMHCS)

The VAMHCS consists of three Maryland VA Medical Centers located at Baltimore, Fort Howard and Perry Point, and an independent 120-bed Rehabilitation and Extended Care Center. Medical faculty, students and researchers primarily interact with the health care system's Baltimore facility. The Baltimore VA Medical Center was designed to support a large outpatient program with extensive primary care as well as subspecialty experiences and ambulatory surgery. The VAMHCS houses the first radiology service in the nation to offer a completely filmless program, made possible by new advances in computer archiving and digital processing of images. Diagnostic quality radiographs are available on more than 80 monitors throughout the Baltimore VA Medical Center which provides improved patient care and expanded opportunities for student and house staff education.

The VAMHCS contains a fully computerized patient information system. The Baltimore site has bedside terminals which allow for ease of patient care and reduced non-productive time foi students. The information system allows instantaneous clinical queries for clinical research and continuous improvement in

patient care. Major increases in support staff assigned to house staff teams has resulted in decreased "scutwork" activities for students and residents as support staff is more frequently available for routine phlebotomy, intravenous line adjustments, escort services and clerical support services. A major reconfiguration of nursing and support staff combined with computer designed programs has increased the efficiency of the medical care so that students, house staff and faculty can better spend their time on direct rather than indirect patient care, and on stimulating educational and clinical research areas rather than on cumbersome support delivery problems.

In the disciplines of medicine, surgery, psychiatry, neurology, anesthesiology, pathology, radiology, rehabilitation medicine, geriatrics and ambulatory care, there is close integration of the faculty, resident and undergraduate levels of the School of Medicine. More than 40 investigators have funded research programs in areas including infectious disease, geriatrics, exercise physiology, cardiology, immunology, neurology, oncology and schizophrenia.

AREA HEALTH EDUCATION CENTER PROGRAM (AHEC)

One of the University of Maryland, Baltimore's commitments to improving health care and delivery programs in primary care is the Area Health Education Center (AHEC) program.

The AHEC program has been developed to provide a comprehensive health care education program for undergraduate and graduate medical students, as well as for students from the other UMB professional schools. AHEC's are multiple health education and training centers that attract students, interns and residents to the rural areas, thereby attracting increased numbers of practicing physicians, encouraging development of health care facilities, providing for the training of additional numbers of allied health care professionals and increasing capabilities for the existing program of graduate and continuing medical education and health training.

There are two AHEC'S associated with the University of Maryland Baltimore. The first center, in operation since 1976, is located in Cumberland, a rural community in Western Maryland. In July 1995 a second center opened in Cambridge, with headquarters on the grounds of the Eastern Shore Hospital Center. Both programs afford students the opportunity to understand and experience the valuable and rewarding benefits of delivering primary health care in a rural environment.

A school policy requires students spend eight weeks of their senior year in clinical education at an ambulatory site. Some students elect to spend this mandatory rotation at these rural sites. In addition, senior medical students may choose a rotation at either AHEC site as a primary care elective. These experiences are designed to encourage students to consider practice in similar settings and to gain a firm appreciation of the special health needs of rural populations.

Student Life

OFFICE OF STUDENT AND MINORITY AFFAIRS

The Office of Student and Minority Affairs is designed to provide guidance, advice, help and administrative services to students enrolled in the school of medicine. In addition, the office is responsible for monitoring student registration, progress and advancement, graduation and all aspects of student life related to undergraduate medical education. To this end the office employs one full-time associate dean, three part-time assistant deans and support staff.

While the entire staff is available to offer assistance to all students, some staff members also assume a specialty area within their overall functions. These specialty areas include senior elective advising, student fellowships, national residency programs advising, counseling and administration of the Vertical Advisory System.

The Office of Student and Minority Affairs also coordinates a number of enrichment programs for high school and college under-represented minority students that are designed to increase the number of these students entering the medical profession.

The School of Medicine is firmly committed to significantly increasing the number of under-represented minority students and faculty. In place are strong outreach, recruitment and retention programs to attract and graduate minority students who are African-Americans, Native Americans, mainland Puerto Ricans and Mexican-Americans. The school is actively involved in the Association of American Medical Colleges' Project 3000 by 2000, which is designed to increase the number of under-represented minority medical students in all U.S. medical schools to 3,000 by the year 2000. Recruitment and academic enrichment activities are provided for students at the high school, undergraduate and medical school levels.

The Office of Student and Minority Affairs works cooperatively with the offices of admissions, academic development and financial aid and entities in the University of Maryland Medical System to carry out this mission. Activities include information dissemination to all segments of the public, paid summer research preceptorships and volunteer opportunities at the School of Medicine and University of Maryland Medical System. In addition, the office also assists in the school's minority faculty development program and community outreach efforts that offer exposure to health-related and research-oriented career opportunities.

For additional information about enhancement programs contact:

Willarda Edwards, MD
Assistant Dean for Student and Faculty Development
University of Maryland School of Medicine
655 West Baltimore Street—Room M-004
Baltimore, Maryland 21201
(410) 706-7689

ELECTIVES

There is no elective requirement during the pre-clinical years although many faculty members offer elective experiences. Offerings may include such diverse topics as cardiovascular pathology, medical rehabilitation, human nutrition, alcohol and drug abuse and many research projects. Some electives may have prerequisites and be open only to sophomores. The office of student and minority affairs compiles course offerings, schedules courses and changes of electives, and provides for both evaluation of a student's performance during electives and evaluation of the elective courses taken.

RESIDENCY PLANNING

The office maintains a residency advisement program that includes counseling, referral to faculty, alumni and community resources and workshops on residency selection provided during the junior year. Recent graduates are surveyed annually so that feedback from a number of residency programs of interest to graduates is kept as current as possible.

VERTICAL ADVISORY SYSTEM

At the beginning of the freshman year students are assigned two faculty advisors. Generally, one of the advisors is in the basic sciences and at least one is a physician. Each pair of advisors is usually assigned three or four incoming students per year with the intention that the relationship will continue through the four years of medical school. The advisory system provides a helpful, ongoing interchange concerning academic, social, personal and career problems and opportunities.

HUMAN DIMENSIONS IN MEDICAL EDUCATION (HDME)

The HDME Program provides opportunities for informal activities among students and faculty outside the classroom setting. These range from social gatherings to small group discussions of concerns and feelings related to the personal and professional aspects of medical education and practice.

Students may elect to participate in the HDME Program at any point in their medical school career. Many enter the program by attending the pre-freshman orientation retreat held in late August. The retreat is attended by students from all levels of training, faculty members and, in many cases, spouses or close friends. Thus, participants are provided an opportunity to get acquainted in an informal and intimate off-campus setting. Much of the time at the retreat is spent in intensive small group sessions. Topics of discussion are determined in each group, but typically include adjustment to medical school, the impact of a medical career on domestic

life and the problem of setting priorities among various professional and personal demands. Recreational activities also are included in the four-day experience.

Students in the HDME Program also participate in the Vertical Advisory System (see office of student affairs), but normally are assigned faculty advisors within the HDME program.

HDME was conceived at The Center for the Study of the Person in LaJolla, California. The program is planned and operated locally by student-faculty committees. One goal of the program is to provide an environment in which students and faculty advisors can develop a bond during the four years of medical school. Another desired outcome is the development of effective communication and listening skills that will enable medical students, house officers and faculty members to become better health care providers.

WHITE COAT CEREMONY

The white coat is a traditional symbol of the medical clinician and scientist. It has come to represent the knowledge, skill, and integrity of the medical professional and the highest standards of professional work, whether in the classroom, laboratory or clinic. Usually held in early December, the White Coat Ceremony officially welcomes freshmen students into the professional community. In mid-fall students are asked to provide a list of two or three people whom they would like to invite to this ceremony, generally parents or partners.

Following a continental breakfast, those attending hear a number of short presentations, with each speaker addressing the issue of professionalism in medicine from his or her own perspective. Speakers include representatives of the medical school administration, the pre-clinical and clinical faculty and the student body. Freshmen students are then called individually to the stage to receive their white coats from members of the faculty. Acceptance of the white coat is an affirmation that, along with acquiring the requisite knowledge, the student will accept responsibility for developing and maintaining professional attitudes and behaviors in work and in relationships with classmates, teachers, patients and the community-at-large.

STUDENT GOVERNMENT

The Student Council is the organization recognized by the medical school administration as the official representative body of the registered students at the School of Medicine. Council duties include disbursing student activities funds according to the needs of its members and coordinating student input in institutional administrative policy decisions. Student Council officers serve as student representatives to national meetings of organizations that guide national educational and medical policies. The council also conducts elections of all class officers.

STUDENT ORGANIZATIONS

Alpha Omega Alpha (AOA). Election to AOA, the national medical honor society, is based on scholastic achievement, service to the school, qualities of leadership, integrity and fairness to colleagues. Students are elected at the end of their junior year or the beginning of their senior year.

Members coordinate programs and lectures with the goal of furthering academic interest and stimulating curiosity. Programs of recent years have included a lecture series on topics in the History of Medicine, an EKG Interpretation course, sponsorship of a Clinical Visiting Professorship, campus tours for prospective medical students, and Junior/Senior Night, an orientation to the match process for junior medical students.

American Medical Association—Medical Student Section (AMA-MSS) The AMA-MSS is the medical student section of the American Medical Association (AMA) that provides leadership positions at the local and national levels, the opportunity for involvement in the medical political process and medically oriented programs for students and the community. At the University of Maryland, the AMA-NSS sponsors several familiar events such as the annual used book sale in August and the morning donut and bagel sale. Members of the AMA-MSS receive the Journal of American Medical Association (JAMA), American Medical News, AMA Member Matters and Pulse, a national medical student newsletter.

Each year the AMA-MSS at the University of Maryland elects and sends a delegate and alternate delegate to two meetings: The Annual AMA Meeting in June, and the Interim AMA meeting in December. Traditionally, the delegate is a second-year student while the alternate is a first-year student.

American Medical Student Association (AMSA). The University of Maryland Chapter of the American Medical Student Association (AMSA) offers the opportunity to become actively involved with a group of dynamic, concerned medical students on the local and national levels. The immediate benefit of membership is working and socializing with peers in friendly, informal settings through participation in a wide variety of activities of interests to the membership.

AMSA is involved in many service activities; microscope and used book sales, coordination of the noontime films and lectures, as well as the student phone and housing directories, orientation activities, workshops, projects and parties. Other activities include local and national legislative monitoring and lobbying, clinic staffing, public education efforts and events coordinated with other school organizations. Fundraising projects help to defray expenses of members attending workshops and regional and national meetings. In addition, AMSA is willing to sponsor activities that are proposed by its members.

On the national level, AMSA promotes the interests of public health and the medical students serve as a forum and information clearing-house for issues of major importance; e.g., AMSA's position on the current administration's proposals as they relate to health care reform and medical education. Benefits to AMSA

members include a four-year subscription to The New Physician (an excellent student journal), special interest task force newsletters, informational booklets, discounts on medical texts, life insurance policies, the AMSA Master card, the "HEAL Deal" for repayment of HEAL loans at lower interest rates, a low-interest loan program with increasing monies available each successive year of school, and unique educational experiences both at home and abroad—all for a single membership fee for all four years of school. The Annual National Convention is open to members (partially subsidized by chapter funds) and is a rare and valuable experience. It features four days of guest speakers, a multitude of exciting health care presentations and workshops, opportunities to share in national policy formulation, a chance to meet other interested medical students and socializing opportunities.

American Medical Women's Association (AMWA) Student Branch. The AMWA Student Branch at the University of Maryland is a dynamic group responsive to the needs of the women medical students. While its first commitment remains to provide support and promote friendship among students, faculty, and physicians, AMWA also provides a network where students can meet and discuss issues such as lifestyles in medicine, career choices, women's health, and political issues important to women and the student body at large.

AMWA is involved in a variety of activities on campus including pot-luck dinners where special guest speakers address issues, monthly noon-time business meetings and get-acquainted gatherings with students and faculty. Although, AMWA is primarily concerned with issues related to women, all AMWA functions are open to the entire student body.

Asian Professional Students Association. The Asian Professional Students Association (APSA) was formed by a group of medical students in 1984, and since then has grown to include members of other schools at UMB. APSA is open to all students, teaching staff and employees regardless of race, cultural background, sex and country of origin. The goals of the association are to encourage dialogue among fellow students of different cultural backgrounds, and to provide a platform for those who appreciate Asian culture. APSA also sponsors educational and social activities for its members and friends.

The Better Half. "The Better Half" is a support group open to all medical students and their significant others who are interested—husbands, wives, boyfriends, girlfriends. The group's goal is both social and supportive. Maintaining a relationship while in medical school can be difficult and knowing other people in the same situation can be helpful to both medical students and their partners. Gatherings such as the pot-luck dinners, wine tasting, wine and cheese and pizza parties are popular affairs. A partner is not needed to attend functions.

Bioethics Club. The Bioethics Club is a relatively new addition, formed to explore ethical issues faced by students and physicians in the medical world. The group is led by Dr. Henry J. Silverman, editor of the University of Maryland Medical System's publication Health Care Ethics, and member of the hospital's Ethics

Review Committee. At bimonthly meetings, actual cases are reviewed and active discussion concerning moral and ethical issues related to particular situations or to new legislative rulings across the country is encouraged. Students also have the opportunity to attend meetings between patients, their families, physicians and members from the review committee and observe the often difficult process of making decisions concerning what course of intervention and care is appropriate for each patient. Students, faculty and administrators are all encouraged to attend.

Christian Medical Society. The Christian Medical Society (CMS) at UMB is a local chapter of a national organization which meets weekly for fellowship, prayer and discussion. CMS is committed to providing Christian fellowship and support for medical professionals, encouraging Christians to mature in their faith, challenging them to integrate their medical careers into their lives in Christ and providing an environment in which non-Christians can explore the claims of Christ. CMS presents meetings on bible study, short-term missions, ethics, Christian family life within the medical profession and evangelism. Dinner is shared every third week. In addition, CMS volunteers help staff the Baltimore Rescue Mission which provides medical care to the homeless. Members also have the opportunity to participate in local, regional and national conferences. All students, faculty and hospital personnel are welcome.

Complementary Medicine Club. Formed in 1994, the Complementary Medicine Club strives to introduce students and faculty alike to various types of therapy which complement traditional western medicine. Among these complementary medicines are acupuncture, herbal medicine and music therapy. The Complementary Medicine Club meets about once every month for an hour-long talk and lunch.

Emergency Medicine Interest Group. The Emergency Medicine Interest Group (EMIG) is a student organization whose mission is to expose students to Emergency Medicine as a career and give students an opportunity to learn skills commonly used in emergency situations. To this end, EMIG sponsors blood drawing, i.v. and suture labs, ambulance ride-alongs and emergency room observation time. EMIG also sponsors talks and luncheons with emergency medicine residents and faculty on topics such as applying for emergency medicine residency and the history of emergency medicine. EMIG members are actively involved in research in the emergency department and have attended emergency medicine physicians' national conferences.

Family Medicine Interest Group. The Family Medicine Interest Group (FMIG) is sponsored by the Maryland Academy of Family Physicians and the department of family medicine. Membership fees for first-year members are paid by the Maryland Academy and members receive monthly professional journals free of charge. FMIG sponsors events and lectures relevant to family medicine throughout the year. FMIG also encourages student leadership at the state and national levels.

Gertrude Stein Medical Society. The Gertrude Stein Medical Society is a group of medical students whose goal is to foster support among gay and lesbian students and to encourage, interaction and education among all students at the university. The group seeks to help other students and faculty understand the special needs of the gay and lesbian community through education and community service. The group meets bimonthly with potluck dinners and other social events. Some members also volunteer at the Chase-Brexton Clinic. The group is open to all students and confidentiality is assured.

Human Dimensions in Medical Education (HDME). The HDME program is active through much of the year in planning the annual retreat as well as other activity programs. Students are welcome to participate in these "behind the scenes" activities that are so important to the program's success.

Jewish Medical Students Organization. The Jewish Medical Student Association encourages all medical students, regardless of specific affiliation (i.e., orthodox, conservative, reform or non-Jewish) to join and participate in the group's activities. The association works closely with the Jewish Community Center's Office for Graduate Studies which provides sponsorship for many of its activities, including Friday night dinners, talks on Jewish medical ethics and the building of a sukkah. The association also works with other schools on campus and in the Baltimore area to plan joint activities.

Maryland State Medical Student Association. The Maryland State Medical Student Association (MSMSA) is a component of the Medical and Chirurgical Society (Med-Chi) of the State of Maryland, which is a state component of the American Medical Association. The MSMSA is involved in issues of health care, medical education and peer review, especially in the State of Maryland.

MSMSA and AMA memberships are usually solicited together, and membership benefits include subscriptions to the Maryland Medical Journal, and the AMA News. The MSMSA provides active student representation in Med-Chi and the AMA. Also, there are several leadership opportunities for students in the AMA through MSMSA.

Organization of Student Representatives. The Association of American Medical Colleges (AAMC) was founded over 100 years ago to improve the quality of American medical education. It now includes membership of 125 medical schools, 85 academic societies such as the American College of Physicians, and 435 teaching hospitals. It maintains numerous data sources available to its members and works cooperatively with other medical organizations such as the American Medical Association as well as providing information and testimony to the U.S. Congress and other federal agencies concerning medical and health-related issues.

The Organization of Student Representatives (OSR), the AAMC's student voice, is composed of one student representative from each medical school choosing to participate. OSR members gather at an annual meeting each autumn to discuss matters of concern to the nation's medical students and to elect an

Administrative Board. The twelve-member Administrative Board meets quarterly with the boards of other AAMC Councils to formulate AAMC programs and policies reflecting student views. OSR business is also conducted at regional spring meetings. The OSR delegate operates to channel information from the AAMC to the medical student body-at-large and vice versa on issues of medical education such as the match, changes in medical curriculum and student indebtedness. Thus, the OSR serves as an effective liaison between the nation's students and medical policy-makers to ensure consideration of student views.

Pediatric Pals. Pediatric Pals is a community service organization created by medical students for medical students. It provides a convenient, flexible and fun community service organization. Pals visit children who are in the pediatrics ward at UMMS either on a weekly basis (1-4 hrs/wk) and/or during monthly parties on Saturday/Sunday afternoons. Pals play Nintendo, read books, sing, rock babies or just "hang out" and be a friend to scared, sad or lonely children.

After a brief orientation, a Pal can choose as much or as little a time commitment as desired.

Student National Medical Association (SNMA). The University of Maryland Chapter of the Student National Medical Association (SNMA) is an organization of under-represented minority medical students that seeks primarily to provide academic and social support for minority medical students at the University of Maryland School of Medicine. The SNMA organizes study groups, provides valuable course information and review material, and facilitates organized discussions on course requirements and strategies between upperclassmen and entering students. The SNMA also seeks to involve itself in health and educational activities which benefit the surrounding community and its youth. In past years the SNMA has been involved in: tutoring local high school students, presentations to inform high school and college students of medical school opportunities and health screening programs in the community. In addition, the SNMA has also sponsored activities for Black History Month which have included seminars and films. SNMA is active in programs that promote greater interaction among minority students, physicians, faculty and alumni.

PUBLICATIONS

Academic Handbook. The Academic Handbook is the "official word" on medical school policy and life, written by those who run the various programs described—administrators, faculty, students. Although the book is prepared through the office of student and minority affairs, student participation and feedback contribute significantly to its effectiveness.

AMSA Directory. With financial support from the office of student affairs and the office of admissions, the American Medical Student Association (AMSA) at

UMB compiles a student address and telephone directory each fall. The book is available to all medical students at no cost.

Snowdays. Snowdays is a booklet written by the freshman class for entering freshmen. Designed to acquaint students with the University of Maryland, Baltimore and surrounding areas and metropolitan Baltimore, it includes information on housing, eateries and entertainment that would be helpful to people new to the city. Snowdays was conceived in the hope of providing freshmen with information that might prove useful before starting the school year.

The Yearbook (Terra Mariae Medicus). Since 1896 Terra Mariae Medicus has provided wide coverage of student life. It is a collection of moments and memories from the four years of medical school put together by the members of each senior class. Each senior receives a yearbook, the cost of which is included in the student activities fee.

INSTITUTIONAL GOVERNANCE AND PLANNING

The Committee System. Several committees are actively involved in shaping the School of Medicine, particularly the curriculum and other essential aspects of medical education, and students have a voice on these committees. The following committees/councils include students in their memberships.

Curriculum Coordinating Committee (CCC) and Subcommittees. The task of the Curriculum Coordinating Committee is to continually study and evaluate the curriculum and methods of instruction, to make recommendations concerning changes and innovations in the curriculum and instructional procedures, to make a continuing study of the student achievement evaluation process and to recommend changes when necessary. In addition, the CCC Subcommittees, i.e., Year I, Year II and the Clinical Years Committees, each include two student representatives elected by their classmates.

School of Medicine Council. Through the School of Medicine Council, representatives of the faculty, students, house staff, alumni and affiliated institutions and School of Medicine administration participate in the development of school policies. In addition, council members hear status reports from committees appointed by the dean. These include the reports of the Curriculum Committee, the Annual Admissions Report and those of the various search committees. The Council meets monthly during the academic year, offering students an excellent opportunity to develop an understanding of the issues affecting the operation and goals of the medical school. There are approximately 80 voting Council members, 11 of whom are students.

Judicial Board. Acceptable behavior within the academic community, including proper behavior on examinations, falls within the purview of the judicial review sys-

tem and its functioning body, the Judicial Board. The system and operation of the board are defined in the "Statement of Ethical Principles, Judicial Review System and By-Laws of the Judicial Board," which is printed in its entirety in the Academic Handbook and distributed to incoming freshmen at orientation.

The board consists of a chairperson appointed by the dean and representatives of the faculty and students in the medical school community. Any member of the community who directly witnesses an act that he or she deems unethical should report the incident in a signed letter to the chairman of the Judicial Board. The board will then investigate the issue and hold hearings, as defined in the aforementioned document. Findings of the board and its recommendations with respect to the accused are forwarded to the dean. Three student representatives, one each from the sophomore, junior and senior classes, are appointed by their class presidents.

Ethical Advisory Committee (University Hospital). This state-mandated committee is composed of about 25 physicians, nurses, social workers, administrators, clergy, attorneys and other personnel, and welcomes the input of students and residents as nonvoting participants. The committee advises hospital staff and families on requests regarding difficult ethical decisions such as life support for terminal patients, and also helps develop hospital policy regarding such critical situations. The committee also serves an educational function to hospital staff and reviews legal and legislative decisions.

Special Task Forces. On occasion, special committees and task forces are established to examine school policies or curriculum issues. Where these issues have direct relevance to students, the classes are frequently invited to send representatives to these functions. Major changes in policy or curriculum typically take two or more years to plan and implement, and this can be frustrating to students who will be members of each class for only one year. At the same time, however, each group of entering students reaps the benefits of changes to which their predecessors have contributed and they now have the opportunity to leave a similar legacy to their successors.

STUDENT HEALTH SERVICES

The Campus Health Office, located in University Family Medicine Associates (UFMA)offices at 29 South Paca Street, is open Monday–Friday from 8:00 am–4:30 pm Students are seen for medical appointments by physicians, residents or a nurse practitioner at UFMA at the following times: Monday-Thursday from 8:30 am–7:00 pm, Fridays from 8:30 am–4:30 pm and Saturdays from 8:30 am–noon. After-hour coverage for emergencies is provided by the physician on-call at University Family Medicine.

The cost of most care provided at student and employee health is paid for through the student health fee. Gynecological services, including health maintenance (PAP smears, etc.), family planning and routine problems, are provided by the family physicians, residents or nurse practitioner. Birth control pills are avail-

able at a reduced cost for students receiving their GYN care through student and employee health/family medicine.

All students are required to have health insurance and an excellent insurance policy is available through the campus. At registration all full-time students must either purchase the UMB policy or waive it by showing proof of comparable coverage. The deadline for waiving the UMB policy is in mid-September. If proof of comparable insurance is not received at student and employee health by that time, the UMB policy must be purchased for each month the waiver is not presented. Demonstrated proof of comparable insurance is required each year the UMB policy is not purchased.

Hepatitis B is an occupational illness for health care providers. It has serious consequences and can even be fatal. Immunization against Hepatitis B is required for medical, dental, dental hygiene, nursing, medical technology and PharmD students. The series of three immunizations is given through student and employee health.

All new students are required to complete a Report of Medical History and an Immunization Record form that documents immunity to childhood illnesses. Students failing to present these completed forms as freshmen will not be permitted to register for the sophomore year.

All family members can be seen at Family Medicine Associates. The family physicians provide care for the entire family, including obstetrical and pediatric care.

COUNSELING CENTER

The Counseling Center provides professional counseling services to students and their families. Students are encouraged to use Counseling Center services for help in dealing with any kind of personal problems they may have. Some of the more common problems that prompt students to seek help include stress, relationship problems, adjustment to changes in school or home life, loss of a loved one and problems with drugs, alcohol or food.

Counseling services are completely confidential and no information is shared with administration or faculty without the student's written permission. Students are always seen by a professional—social worker, psychologist, psychiatrist or addiction counselor. This is not a training site. Counseling is done on an appointment basis and student's class schedules can be accommodated in scheduling appointments. There is no out-of-pocket expense to use this service.

HOUSING

The University Housing Office administrators the housing program for University-owned housing which can house approximately 275 students in two resident locations. The Student Union Building has two floors of traditional dorm-style rooms capable of housing up to 80 students in single or double rooms. All rooms

are furnished with bed, desk and closet and each floor has a kitchenette, lounge and restroom/shower facilities. A laundry room with coin-operated washers and dryers is located on the ground floor of the Student Union building.

Additionally, the university owns 80 apartments in a traditional row house format known as Pascault Row. This complex includes efficiency, one-bedroom and two-bedroom arrangements. Each apartment is furnished and contains a living area, kitchenette and private bath and is designed to accommodate one-to-four students. The Pascault Row complex also has a laundry room with coin-operated washers and dryers and each apartment has access to storage in lockers on the ground floor.

For housing application and/or information contact:

University Housing Office
Baltimore Student Union, Rm. 122
621 W. Lombard Street
Baltimore, Maryland 21201-1575
(410) 706-7766

The University of Maryland's off-campus housing program is a self-service program designed to help students identify housing options convenient to the university. Although the housing program is coordinated by university personnel, it is offered only as a convenient way to facilitate the housing search. The university does not inspect the properties listed through this service and therefore strongly encourages students to personally do so before signing a lease. Finally, the university has no relationship with the property owners, landlords or realtors who list property through this service.

The university housing office maintains a kiosk in the lobby of the Baltimore Student Union with current information filed as: apartments for rent, rooms for rent, house or condominium for rent or sale and roommate referral. There are also other types of off-campus housing information available at this kiosk such as Apartment Shopper's Guide and Home Buyers Guide.

Finally, a website has been created for the university at www.UMB-Apartment-Guide.com. Questions related to off-campus housing can be addressed by calling (410) 706-8087.

ATHLETIC CENTER

The campus Athletic Center, located on the tenth floor of the Pratt Street Garage, offers a variety of programs including intramural sports, fitness/wellness activities, informal recreation, minicourses and special events. The facility is equipped with two basketball and volleyball courts, a squash court, an expanded weight room with free weights and paramount equipment, stationary bikes, stair, treadmill and rowing machines and areas to stretch. There are men's and women's locker rooms each

with a sauna and showers. Students are admitted free with valid student ID. Paid positions for students are available at the athletic center.

Intramural sports include basketball, volleyball, racquetball, squash, tennis and softball for men, women, coed and open competition.

It is the athletic center's goal to provide a comprehensive fitness and wellness program on campus. Participation in regular physical activity generally maintains or improves physical and mental well-being. The center offers a variety of aerobic classes, a total conditioning class, mini-screening, fitness walking program and fitness assessments. Individual fitness assessment includes tests for heart rate, blood pressure, weight, flexibility, cardiovascular endurance, body composition and muscular endurance. Participants receive personal evaluation of their fitness levels along with specific suggestions for developing a healthy lifestyle.

In conjunction with the university police the center also offers Rape Agression Defense (RAD), a women's self-defense course. Sessions are offered throughout the year and are taught by trained and certified instructors.

University of Maryland, Baltimore students may also use the athletic facilities at UMBC which include both indoor and outdoor olympic-size swimming pools, outdoor hard-surface tennis courts and Nautilus weight-training equipment. A shuttle bus operates between the two campuses

BALTIMORE STUDENT UNION

Many campus-based student services are housed in the Baltimore Student Union. Administrative offices include the Assistant Vice President for Student Affairs, Associate Dean of the Graduate School, the Graduate School Admissions Office, Auxiliary Services Office, Housing Office, Student Financial Aid, Records and Registration, the University Student Government Association and the Graduate Student Government Association Offices, Student Services Office for disabled and international students, student transportation services and a Writing Clinic. In addition, the Baltimore Student Union houses the University Bookstore, a deli, the Courtyard Cafe, a commuter lounge with full-service vending, TV lounge, meeting room, an ATM machine, laundry room and two floors of dormity rooms.

PARKING AND TRANSPORTATION

On-campus parking is available to students. Commuters will first have to purchase a parking permit ($1.00) which allows campus parking but does not guarantee a space. Commuters may park in the Lexington Garage and Koesters Lot (Lexington and Pine Streets) at the current student rate of $3.50 per day on a first-come, first-served basis.

Students who live in on-campus housing pay for parking by the semester or year and are guaranteed 24-hour parking in a garage adjacent to their residence facility. For more information about parking on campus, write Parking and Commuter

Services, University of Maryland, Baltimore, Baltimore, Maryland 21201 or call (410) 706-6603.

Students who live in the communities adjacent to UMB can use the caravan shuttle which operates in the evenings year round. An intercampus shuttle provides transportation between the University of Maryland Baltimore County (UMBC) and UMB. For schedules and information on either of these shuttles call the Parking & Commuter Services Office at (410) 706-6603.

Public transportation makes the campus accessible by bus, subway and light rail. More than a dozen MTA bus routes stop in the campus area. The Baltimore Metro (subway) runs from Charles Center downtown to Owings Mills in northwestern Baltimore County. A light rail line offers service with park-and-ride accommodations from Hunt Valley in northern Baltimore County to Glen Burnie in Anne Arundel County. The UniversityCenter stop is at Baltimore and Howard Streets.

LIVING IN BALTIMORE

Baltimore is a fun, friendly city with many affordable and convenient housing options. The brochure Living in Baltimore describes on- and off-campus options for UMB students; it is available through the admissions office or by calling the Residence Life Office at 410 706-7766.

On-campus living options include a limited number of furnished university-owned apartments and dormitory style accommodations plus unfurnished apartments in a half-dozen privately-owned loft district buildings on campus. The Baltimore Student Union and Pascault Row apartments are the two university-owned, on-campus housing complexes.

Many students choose to live in neighborhoods surrounding the campus. A wide range of rooms, apartments and home rentals are available throughout the metropolitan area. The Student Life Office, located in the Baltimore Student Union, keeps a listing of available rooms and apartments.

School of Medicine Departments

ANATOMY AND NEUROBIOLOGY

Professor and Chair
Michael T. Shipley, PhD

The educational goal of the department of anatomy & neurobiology is to provide a basis for understanding the development, structure and function of the human body. To this end, department of anatomy & neurobiology faculty are major participants in two integrated teaching blocks, Blocks II and V, and have minor teaching involvement in Blocks IV and VI. Block II, Structure and Development, combines gross human anatomy, microanatomy (histology), embryology, radiology, surgery and physiology. In Block V, Neurosciences, neuroanatomy is integrated with neurophysiology, neurochemistry, neurobiology and clinical neurology. In both blocks, lectures are correlated with practical laboratory assignments. In this way, the student is provided with a comprehensive treatment of the subject matter and has ample opportunity to learn its important clinical implications and research applications.

RESEARCH INTERESTS

(URL: http://neurobiology.umaryland.edu)

Major research efforts in the areas of developmental neurobiology, chemical senses and neural networks have been added to existing strengths in cellular neurobiology and reproductive biology. A wide variety of research opportunities is made possible by extensive collaboration among departmental faculty and neuroscientists in other departments and at other institutions. Departmental faculty investigate questions from the molecular to the system level, from gene expression through assembly and function of specialized cell-membrane domains to development, function and plasticity of neuronal networks. Our faculty apply contemporary molecular, physiological and anatomical techniques to these questions. Several laboratories use organotypic slice cultures to investigate the development and function of neural networks.

Graduate students are encouraged to investigate critical biological questions by applying a broad range of experimental approaches. Graduate programs lead to the Ph.D. or M.D./Ph.D. degrees. The program of study is uniquely tailored to individual student needs to establish a foundation in molecular and cellular biology with a minimum of required coursework. In addition, courses in principles of neuroscience, developmental neurobiology, the structure-function of membranes, ion channels, synaptic transmission, imaging, and reproductive physiology and

endocrinology are available as well as journal clubs in neuroscience, chemosensory neurobiology, membrane biology and reproductive biology.

The department plans to offer additional courses in the analysis of neural networks and is launching innovative mini-courses that focus on scientific writing and preparation of grant applications to further prepare students to become competitive scientists.

ANESTHESIOLOGY

Martin Helrich Professor and Chair
M. Jane Matjasko, MD

During the first two years anesthesiology faculty participate in lectures, conferences and small group discussions in the departments of physiology and pharmacology and experimental therapeutics. Such participation is intended to illustrate the direct application of basic science principles to the clinical practice of anesthesiology.

Electives of varying orientation and complexity are provided during the clinical years. These include clinical anesthesiology, neuroanesthesia, pain management, critical care medicine and research. Further information and details concerning the elective courses may be found in the electives catalog or by contacting the department chairperson.

RESEARCH INTERESTS

Research efforts are in the areas of: mechanisms of hypoxic cell death with focus on the mitrochondria, computer models and anesthesiology simulation, human factors engineering and several clinical research projects in obstetric, cardiac and neuroanesthesia.

- NIH and industry-funded research into apoptosis both preclinical and clinical phases. Clinical studies in trauma, cardiac arrest and post open-cardiac surgery procedures allow correlation of human data with that in animals.

- U.S. Navy-funded project to examine performance of anesthesiologists in high stress clinical environments.

- NASA-funded project examining remote decision-making by clinicians.

Several faculty members actively participate in laboratory and clinical studies. Medical student participation is encouraged.

BIOCHEMISTRY AND MOLECULAR BIOLOGY

Professor and Chair
Giuseppe Inesi, MD, PhD

Biochemistry, including molecular biology and gene expression, seeks to understand the phenomena of biology in terms of molecular structure and interaction. It permeates all of modern biology and medicine and is a fundamental prerequisite to other medical sciences, particularly pharmacology, microbiology, cell biology, pathology and the clinical sciences.

The teaching goal of the department is to present a concise but comprehensive lecture-conference course including as major subjects: proteins, enzymes, nucleic acids, intermediary metabolism, energy production and utilization, chemical aspects of hormones, protein and nucleic acid biosynthesis, with general reference to cell and molecular biology and genetics.

The department of biochemistry and molecular biology faculty is involved in teaching the first-year blocks; Block IV—Cell and Molecular Biology, Block V—Neurosciences and Block VI—Functional Systems.

UNDERGRADUATE MEDICAL PROGRAM

Teaching of cell and molecular biology for medical students is concentrated in a ten-week period in late fall of the freshman year. Activities include plenary lectures, small group conferences with problem-based learning, independent studies and a series of correlative medicine sessions to demonstrate the application of biochemistry to the understanding of human disorders.

GRADUATE PROGRAMS

The department of biological chemistry also offers PhD programs, and a MD/PhD program. Classroom teaching for graduate students includes courses in introductory biochemistry and molecular biology, proteins and enzymes, biochemistry seminar, muscle: contractility and excitation-contracting coupling and advanced molecular biology. In addition, several professors are available as advisors for fulfillment of experimental theses in funded research laboratories.

Students interested in biochemistry and cell and molecular biology are encouraged to contact individual faculty members about opportunities for part-time or summer research. Limited funds have been available to support part-time research assistants from the medical school.

FACULTY RESEARCH INTERESTS

Research interests within the department of biological chemistry are numerous and include studies in membrane transport and membrane biochemistry, eukaryotic and prokaryotic molecular biology, virus assembly, enzymology, fluorescence and NMR spectroscopy, Ca2+ regulation mechanisms, receptor mechanisms, hemoglobin biochemistry as well as many others. In addition to the individual research programs of the faculty, the department is widely recognized for its Center of Fluorescence Spectroscopy, under the direction of Dr. Lakowicz; the NIH Program Project on regulation of Ca2+ in muscle, under the direction of Dr. Inesi; and the NIH Program Project on Hemoglobin Substituents, directed by Dr. Bucci.

DERMATOLOGY

Professor and Acting Chair
Joseph W. Burnett, MD

The department of dermatology faculty teaches in the first-year Structure and Development block and in the second-year Immunology, Host Defenses and Pathophysiology and Therapeutics blocks. During the ambulatory care portion of the fourth year students are required to attend eight half-day sessions in the clinic. An examination is given at the conclusion of this exercise.

DERM 541. Dermatology Elective. Dermatology may be taken as an elective during the fourth year. Students work together with the dermatology residents and attending physicians in the diagnosis and treatment of a large number of patients with cutaneous disorders. Emphasis is placed on developing proficiency in dermatologic examination and description. Students actively participate in grand rounds, daily seminars and the weekly journal club. They also attend the clinical sessions of the Maryland Dermatological Society. A brief oral presentation and short final examination are required.

GRADUATE PROGRAM

The University of Maryland has a three-year residency program in Dermatology which stresses both the clinical and research aspects of this specialty. One year of internship in a primary care field is required. The usual conferences in a Dermatology program such as pathology, mycology, immunology and allergy, basic sciences, journal club, radiation therapy, pharmacology and clinical textbook review are included in the program.

DIAGNOSTIC RADIOLOGY

Professor and Chair
Philip A. Templeton, MD

Since German physicist Wilhelm Conrad Roentgen discovered the x-ray in 1895, radiology has become an integral part of our healthcare delivery system. With advances in technology, radiologic studies now establish or verify the diagnosis in three -out-of-four cases of organic disease. The development and integration of nuclear medicine, ultrasonography, computed tomography and magnetic resonance imaging (MRI), has provided diagnostic imaging with an even more central role in diagnosis and selected (interventional) therapeutic procedures. The radiology department at the University of Maryland has state-of-the-art facilities and cutting-edge technologies, making it one of the most sophisticated in the world.

RESEARCH INTERESTS

Clinical research is the main focus of departmental research activity. Multiple divisions within the department are pursuing a wide variety of research in state-of-the-art technologies such as spiral CT, MR imaging, SPECT imaging, teleradiology, and picture-archiving and communications system (PACS). Recently, the department has become among the first in the nation to obtain CT fluoroscopy and portable CT. Specific projects include the evaluation of interventional and non-interventional applications of CT fluoroscopy, assessment of MR pulse sequences to improve diagnosis, use of spiral CT to decrease the intravenous contrast dose, and a comparison of the quality of conventional and PACS images. A complete PACS system is installed in University Hospital and the Baltimore VA Hospital.

The department is organized into the subspecialty sections of abdominal imaging, angiography/interventional radiology, chest radiology, musculoskeletal radiology, neuroradiology, nuclear medicine, pediatric radiology, trauma radiology and ultrasonography. The subspecialty organization and multiple interdepartmental conferences facilitate collaboration with diverse clinical specialties. Current projects include cooperative studies with physicians in the University of Maryland Cancer Center, MR evaluation of renal-pancreas transplants and CT assessment of patients undergoing lung volume reduction surgery. Other projects are underway in cooperation with MIEMSS physicians, evaluating the usefulness of CT and MRI in the diagnosis of multiple visceral and skeletal trauma, particularly involving the pelvis and acetabuli. Multiple cooperative cardiovascular nuclear medicine studies are progressing with the department of medicine's division of cardiology.

UNDERGRADUATE MEDICAL PROGRAM

The department of radiology offers the medical student an opportunity to acquire a broad base of knowledge related to imaging in almost all aspects of medicine.

Formal instruction begins during anatomy in the first year and pathology in the second year. During the third or fourth year, students may elect to take the basic radiology course (RADI 540). The curriculum is supplemented with small group case discussions with the faculty and contact through interdepartmental rounds and conferences involving radiology during clinical rotations.

Third or Fourth Years Basic Radiology Elective, RADI 540

Small groups of students are assigned for a period of four weeks to the department of radiology. Groups are subdivided to allow individual instruction as the student rotates through a series of observation periods in selected subspecialties within the department. Students also receive an introduction to the department of radiation oncology. Reading assignments, slide-tape exercises, a student teaching file and seminars form the core of the learning experience. Students attend departmental conferences and joint conferences with other departments. An objective final examination is included in the course.

Third and Fourth Years Subspecialty Radiology Elective

Students learn more about appropriate use of diagnostic imaging and interpreting images. The curriculum is flexible, tailored to the needs of the student's career choice. Students are expected to investigate a small aspect of imaging within their area of interest and make a short presentation to the faculty and residents. This presentation and overall performance, as evaluated by the curriculum supervisor, serve as the evaluation criteria for this elective. Students are given the opportunity (in all sections) to perform clinical and/or lab research, correlate imaging evaluations, do statistical analysis, run literature reviews, etc.

GRADUATE PROGRAM

A four-year residency is offered in diagnostic radiology at the University of Maryland Medical System. Fellowships are offered in computed body tomography/ultrasonography/MRI, interventional and vascular radiology, neuroradiology, critical care trauma, musculoskeletal radiology, women's imaging, nuclear medicine and chest radiology.

EPIDEMIOLOGY AND PREVENTIVE MEDICINE

Professor and Chair
Paul D. Stolley, MD, MPH

Modern epidemiology is a biomedical discipline at the interface of clinical practice and basic medical science. Preparation for the practice of medicine requires knowledge not only of clinical medicine and basic medical science, but also epidemiology, research methods, biostatistics and social science.

The department is engaged in teaching, research and service across the spectrum of public health and preventive medicine. The faculty has expertise in clinical epidemiology, biostatistics, environmental and occupational medicine, clinical pre-

ventive medicine, health services research, aging, behavioral sciences, international health, women's health and clinical research methods. Departmental courses, seminars, journal club, clinical assignments and supervised research experiences are offered to enhance the physician's capabilities in these areas of increasing importance to clinical medicine. Interdisciplinary relationships have been formed with other departments and clinics within the University of Maryland Medical Center and throughout the region.

The department introduces principles of epidemiology and biostatistics, clinical research methods, occupational and environmental medicine and organization of the health care system in the second year, and shows their application to clinical medicine in the third and fourth years of the medical school curriculum.

MD/PhD students can elect to pursue their PhD degree in epidemiology. Another option for medical students interested in preventive medicine is a combined MD/MS degree.

The department sponsors an ACGME approved two-year residency program leading to board certification in general preventive medicine. The program prepares physicians for positions in federal health agencies, state health departments, hospitals, medical schools, public health institutes and industry, as well as for the practice of clinical preventive medicine.

Many of the graduate courses, tutorials and research experiences are available to medical students during their elective periods. Students are welcome at departmental seminars listed in the Academic Calendar and at the journal club which is scheduled each week throughout the academic year.

Community service activities of the department are carried out in health planning, research and evaluation through active collaboration with hospital clinics, health departments, governmental agencies and voluntary organizations concerned with public health problems.

RESEARCH INTERESTS

Departmental research activities cover a broad range of faculty interests. Clinical and community intervention studies are directed toward the causes and prevention of major chronic diseases. Environmental and genetic risk factors associated with disability are an area of active research. Research on hip replacement outcomes, as well as treatment of Lyme disease, exemplifies increased attention to the study of medical care effectiveness and outcomes. Behavioral change research, particularly smoking cessation and diet modification, focuses on establishing and maintaining a healthy life style. The department's program of international health has a research project on viral hepatitis in Egypt and investigates the prevention and control of infectious and tropical diseases in other parts of the world. Women's health throughout the life cycle has become a recent research concentration: musculoskeletal and reproductive health are of particular interest.

Second Year

Biostatistical and epidemiological methods, principles of Occupational and Environmental Medicine and Organization of the Health Care System are integrated into the blocks of systems-oriented instruction in the second year. The emphasis is on providing practitioners with the tools necessary to evaluate the scientific medical literature critically regarding issues such as disease etiology and diagnostic testing, as well as preventive and therapeutic interventions. These concepts are introduced in lectures and applied in exercises in small-group sessions. The exercises complement systems-related material introduced by other disciplines and relate to research papers which address clinically relevant issues. (Drs. Hebel and McCarter and Faculty)

Clinical Years

The applications of preventive medicine to clinical practice are presented in the junior-year ambulatory and clinical preventive medicine combined rotation. Emphasis is placed on the important role of the physician in health promotion and disease prevention. Sessions focus on risk factors for the leading causes of death and disability in the United States and on important issues in health care policy affecting physicians and their patients. Students also present patient management cases. In the senior year, each student conducts a research project at an assigned clinical site during the ambulatory care rotation. (Drs. Fix, Havas and Clinical Faculty)

Electives

Elective opportunities are available for medical students, including tutorials with selected faculty members, supervised research experiences and field experience. Among current offerings are the following:

PREV 541. Introduction to Public Health Practice (Dr. Rubin)

PREV 542. Tropical Medicine and International Health (Dr. Strickland)

PREV 543. Clinical Practice in Occupational Health (Dr. Keogh)

PREV 544. Occupational Health Hazard Investigation Field Experience (Dr. Keogh)

PREV 545. Health Problems in Developing Countries (Dr. Strickland)

PREV 546. Occupational Respiratory Health Hazard Investigational Field Experience (Dr. Keogh)

PREV 547. Migrant Health Field Experience (Dr. Keogh)

PREV 550. Practical Experience in State-wide Surveillance of Lyme Disease and Ehrlichiosis (Dr. Strickland)

PREV 551. Research in Occupational Health (Dr. Keogh)

PREV 589/599. Research in Epidemiology and Preventive Medicine (Dr. Rubin)

FELLOWSHIPS AND HONORS PROGRAMS

Summer fellowships and honors programs in preventive medicine are available to a limited number of students. Each student works closely with a faculty member and undertakes a research project in some aspect of preventive medicine or epidemiology. Students also participate in departmental seminars, journal club and workshops that enhance interaction with faculty members, residents and other students. Elective credit may be given upon completion of project requirements.

GRADUATE AND POSTGRADUATE STUDIES

The department's graduate program consists of a PhD in epidemiology and an MS in preventive medicine, as well as the MD/PhD and MD/MS combined degrees available to medical students. Work toward the PhD in the combined MD/PhD degree will normally occupy at least three years between the second and third years of medical school. Stipends are available to support one or two MD/PhD students. The combined MD/MS may require one year in addition to the usual four-year medical school curriculum which also satisfies one year of the requirements for Board certification in Preventive Medicine.

The department has a postgraduate two-year residency program in general preventive medicine leading to eligibility for certification by the American Board of Preventive Medicine. The residency provides a variety of individually planned opportunities for advanced study and practice in epidemiology, biostatistics, computer science, health care administration, gerontology and occupational health. Components of the residency program include required and elective graduate-level courses, a variety of seminars, journal club and workshops, supervised research experiences and field placements in public health or research settings. Course work leads to a Master of Science degree in preventive medicine.

In cooperation with the departments of medicine, pediatrics, family medicine and other clinical departments, combined residency programs may be arranged for qualified applicants leading to board-eligibility in both preventive medicine and a clinical specialty.

FAMILY MEDICINE

Professor and Chair
Herbert L. Muncie Jr., MD

The department of family medicine educates family physicians to render high-quality medical care to individual patients and families of all ages in a continuous and comprehensive manner. Family physicians are responsible for patient care at the point of entry into the health care system; providers or coordinators of health care at the secondary and long-term care phases of illness; and coordinators of tertiary care.

The department offers educational experiences in family medicine for students at the University Family Medicine office (office site of faculty), on the Family Practice Inpatient Service and through an interdisciplinary, longitudinal educational program that is guided by a staff of experienced family physicians. Moreover, students may participate in community health services, supervised practice experiences and health care research.

Within the discipline of family medicine, several areas are emphasized. The department has a division of geriatrics that dates back to 1974 and is a national leader in geriatrics education. Multiple programs, both departmental and interdisciplinary, are in place or being formulated. The broad spectrum of the division's educational, research and patient care efforts includes the pre-elderly well, the hospitalized elderly, the frail, homebound elderly and the chronically incapacitated, aged patient. The division provides regular house calls for 150 frail, homebound elderly, the largest program in the city. The division of geriatrics is a leader in the field of quality assurance in long-term care facilities. Expansion of facilities and activities to continue eminence in this area is in progress.

The department has a division of behavioral medicine that further integrates the teaching of basic science, clinical medicine and the psychosocial aspects of health care. The division assists in the education of substance abuse, training issues related to family violence and abuse, and common mental health conditions seen in family medicine, such as anxiety and depression.

The department recently developed a new division of complementary medicine as part of the Lang Complementary Medicine Project. This is a research oriented project that examines the effectiveness of acupuncture, homeopathy and other complementary medicine techniques in medical care with an additional component of education and clinical care. The division has a full-time faculty acupuncturist and conducts an annual seminar series on complementary medicine.

The department has developed an active sports medicine division. The family physician participates in the care of the Baltimore Ravens, University of Maryland Terrapins and the Coppin State athletes. A fellowship in primary care sports medicine is available.

The department has a major focus on providing health care to underserved patients and communities. The program involves community outreach and disease prevention.

RESEARCH INTERESTS

The research efforts of the department of family medicine reflect the broad interests of the department's faculty. Current projects, which are clinically oriented and relate to current medical problems, range from epidemiologic studies to evaluations of specific therapies. The department has a strong interest in health promotion and nutrition, especially as they relate to the family and the elderly. The department concentrates on investigating ways to improve community health. Collaborative efforts with other departments involve investigations into health promotion, infections in the elderly, abdominal pain, informed consent and osteoarthritis. During their last year of training, all family medicine residents are required to complete a research project and to present their results at the Annual Family Medicine Residents' Research Day. The department faculty, fellows and residents present their research at national meetings, and in journals, books and other publications.

UNDERGRADUATE MEDICAL PROGRAM

Minimester Electives. During the summer months, students may elect to spend time in the office of a selected family physician in order to observe the varied professional activities of a physician practicing in the community. During preceptorship experiences, students may participate in direct patient care or primary health care research.

Family Care Track Program. The Family Care Track (FCT) is an elective undergraduate experience designed to teach medical students the principles of family medicine with a focus on the urban, poor, multi-problem family. It provides a continuous clinical experience through all four undergraduate years. Students are assigned to follow three families over four years in the department's Family Practice Centers. The families are selected to provide exposure to obstetric, pediatric and geriatric care, and to family dysfunction. Supervision is provided to the individual student and through the use of small group integration seminars for case discussion. The students also are required to complete a community medicine seminar series, a social services preceptorship, a needs assessment, a community project and a four-week clinical preceptorship in sites, including some located in health-professional shortage areas.

Up to 20 students are selected each year from the freshman Longitudinal Elective in Family Medicine to participate in the Family Care Track Program. Credits for this elective include four weeks of senior elective credit at the completion of the program.

Longitudinal Ambulatory. The longitudinal ambulatory clerkship is designed to: 1) give students a longitudinal experience in primary care, 2) help the student integrate the management of patient problems through the continuum of initial presentation, outpatient and inpatient clinical medicine, and 3) allow the student to have an extended interaction with a primary care physician for role modeling

purposes. Students spend one afternoon every other week with a primary care physician (pediatrician, family practitioner or general internist) during their junior year of medical school.

Third-year Family Medicine Clerkship. The family medicine clerkship focuses on the guiding principles of family medicine: continuity and coordination of care, comprehensiveness, community, prevention, and family. Students spend four weeks in a family medicine practice in either an urban or suburban locale. Each Friday during the clerkship students meet at the department of family medicine for a series of lectures on the family life cycle and to research, evaluate, and present case studies/patients.

Senior Elective in Family Practice. In this elective, students work with a community family physician preceptor. They have the opportunity, under supervision, to manage problems typical of a busy practice, ranging from obstetrics to geriatrics. Here, there is ample opportunity to be involved in coordinating continuous care of patients over a four-to six-week period. Students begin to understand the patient in relation to family, job and environment. Furthermore, the student observes the role of the physician in society, the social and civic obligations and responsibilities to the patient. Site options range from urban health manpower shortage sites to rural private practice. In these varied settings, students are expected to conduct a limited clinical investigation, using data collected in the practice, and to attend weekly Alcoholics Anonymous or Al-Anon meetings in the community.

Senior Internship in Family Practice. The department of family medicine offers an eight-week internship to senior students. This is an extensive inpatient experience utilizing the family medicine inpatient service. Variety is a major attraction as the patients' needs range from newborn care and obstetrics to adult general medical and geriatric care. The student is exposed to the family practice approach to inpatient care with an emphasis on interdisciplinary, comprehensive and continuous care and participates in night and weekend call. Students may choose to accomplish the rotation at University Hospital or Union Memorial Hospital. The rotation at Union Memorial is primarily an internal medicine experience.

Senior Ambulatory Clerkship in Family Practice. Students may select University Family Practice as an option in the required Senior Ambulatory Course. This eight-week rotation exposes students to the clinical practice of the department of family medicine residency program. In this setting, students are scheduled to see patients daily in the University Family Practice Center, work with a variety of preceptors from the department of family medicine and participate in didactic sessions. This ambulatory experience is designed to expose students to the principles and practice of family medicine.

Longitudinal Ambulatory Clerkship. The longitudinal ambulatory clerkship is designed to: 1) give students a longitudinal experience in primary care, 2) help the student integrate the management of patient problems through the con-

tinuum of initial presentation, outpatient and inpatient clinical medicine, and 3) allow the student to have an extended interaction with a primary care physician for role modeling purposes. Students spend one afternoon per every other week with a primary care physician (pediatrician, family practitioner, or general internist) during their junior year of medical school

GRADUATE MEDICAL PROGRAM

The University of Maryland's approved three-year residency in family practice is one of the oldest in the nation. Approximately 39 residents are enrolled in a three-year program. The program's goal is to provide comprehensive training in the specialty, utilizing the latest information and educational methods. Resident training takes place both at University Hospital, where the expertise of faculty in all specialties can be utilized, and in several community hospitals where the residents are exposed to a wide variety of patient problems. Flexibility is maintained through the availability of electives in order to accommodate specific needs of the trainee. Although the majority of graduates are actively engaged in family practice in rural, suburban and urban areas, a significant number are pursuing academic careers.

MEDICAL AND RESEARCH TECHNOLOGY

Professor and Chair
Denise M. Harmening, PhD

The department of medical and research technology currently offers a medical track (medical technology) and a research track (biomedical science/biotechnology). These programs combine the advantages of a major research university with the benefits of small classes and a high faculty-to-student ratio. As a component of a large academic health center, the department of medical and research technology affords students unusual opportunities to participate in a stimulating educational environment while gaining practical experience in clinical laboratory science and biotechnology.

Medical technology (clinical laboratory science) provides information crucial to the diagnosis and prevention of disease, the management of patient therapy and maintenance of health. Medical technologists are involved in performing laboratory procedures ranging from identification of microorganisms, to providing blood for emergency transfusion. Biomedical science focuses upon the discovery, development and production of chemicals, diagnostic products and biopharmaceuticals. The biotechnologist uses skills in molecular and cellular biology, immunology, protein chemistry and microbial fermentation to produce reagents and products used in industry, medicine and in basic and applied research.

Students in both tracks complete a two-year preprofessional curriculum at a regionally accredited community college or university of their choice. Those attending two-year institutions may transfer directly to the department of medical

and research technology at the University of Maryland, Baltimore. Most students complete the professional curriculum in two years; however, a three-year, part-time option is available for non-traditional students. In addition, a post baccalaureate certificate program will be offered in an evening/weekend program planned for the fall of 1998 for the medical technology track. To promote the departmental philosophy of life-long learning, all students participate in a formalized professional development program. Students receive a bachelor of science degree in medical and research technology. Students completing the medical technology program are eligible for certification from national agencies such as American Society for Clinical Pathologists and the National Certifying Agency. The medical technology concentration of study fulfills requirements set forth by the National Accrediting Agency for Clinical Laboratory Sciences, and has received a full seven-year accreditation through the year 2002. The department also offers a master's of science in medical & research technology in which students may enroll in either the biomedical research track or the laboratory management track. The department has successfully developed a minority outreach program which has contributed to one of the highest percentages of minority enrollment in a science-based curriculum at a majority institution. A Health Careers Opportunity Program (HCOP) is currently available to interested minority and disadvantaged students.

CLINICAL AFFILIATIONS

During the final component of the program, students complete clinical practice courses in four specialty areas. The department is affiliated with clinical facilities in the Baltimore-Washington area. Clinical facilities include university-based and community hospitals, and independent laboratories.

RESEARCH AFFILIATIONS

The biomedical science concentration requires students to complete three months of training at two externship sites: the first in the research laboratories of the University of Maryland, Baltimore, the Maryland Biotechnology Institute or other University System of Maryland campuses with research programs in biotechnology; the second in either a large or small-scale industrial setting.

The number and variety of clinical and research sites are assets that set the University of Maryland School of Medicine's medical technology and biomedical science research programs apart from others, and allow students to experience several different work settings.

For additional information contact:

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MEDICINE

Professor and Interim Chair
Frank M. Calia, MD

Professor and Vice-Chair
Philip A. Mackowiak, MD

Associate Professor and Director, Residency Training Program
Associate Chair for Education
Susan D. Wolfsthal, MD

The department of medicine, or internal medicine as it is called in some schools, teaches the body of medical knowledge that enables one to diagnose and treat the illnesses of adults primarily with medicines rather than with operations.

The practitioner of internal medicine is usually called an internist, but he or she may be referred to by the title physician, in the specialized use of the word, which can also be applied to any medical doctor. An internist may be a cardiologist, an endocrinologist, a gastroenterologist, a rheumatologist or a practitioner in one of the dozen or so specialties of internal medicine. But the internist always remains the physician (or the diagnostician as internists were called in former times) whose special competence is solving difficult diagnostic problems and personally applying or obtaining from a colleague the best treatment available.

The term internal medicine, which derives from the German Innere Medizin, was first used during the nineteenth century when many American physicians traveled to Germany and Austria for training in what were then the leading clinics and medical laboratories. According to one medical historian, "Within a decade or so after 1880, internal medicine was differentiated from ordinary clinical medicine, the simple natural history of disease, by emphasizing that it was based on experimental work in physiology and physiochemistry." Internists have always required special training to acquire their knowledge and skills and have continuously shown a particular interest in the scientific basis of clinical work.

Educating medical practitioners for the state and the nation is the principal training responsibility of the faculty of the department of medicine, but they also seek to develop in some students a desire to make useful discoveries through basic

or applied research. Fundamental advances in the causes and treatment of disease have often been made by internists, for example, the work on cholesterol metabolism which in 1985 brought the Nobel Prize in Medicine and Physiology to two internists, one a gastroenterologist and the other a geneticist. In keeping with this traditional devotion to the value of research, the department of medicine provides many opportunities for students to participate in research and strongly encourages all who may have an interest to experience laboratory work with investigators.

UNDERGRADUATE COURSES

First and Second Years

The department of medicine faculty teach in the first-year Neurosciences and Functional Systems blocks, and in the second-year Pathophysiology and Therapeutics, and Immunology, Host Defenses, Infectious Disease, Epidemiology and Preventive Medicine blocks.

Second Year

PDIA 520. History and Physical Examination. Eliciting an accurate story of the patient's complaints (the history) and detecting abnormal findings by physical examination constitute the fundamental skills of every physician. To acquire these abilities, students attend introductory lectures from members of the faculty; afterwards, groups of two students meet weekly with instructors in one of the University of Maryland's teaching hospitals. The students interview and examine patients with a wide variety of illnesses and then discuss the findings with their teacher who correlates the observations with pathophysiological abnormalities being studied in basic science courses. The course also includes small group sessions with instructors from neurology, pediatrics and psychiatry. This will be incorporated into the Introduction to Clinical Practice block given longitudinally in the sophomore year of the "new curriculum."

Third Year

MEDC 530. Clinical Clerkship. This is the fundamental course in internal medicine for medical students. The clerkship lasts 12 weeks with eight weeks of inpatient internal medicine and 4 weeks of ambulatory internal medicine. For eight weeks, the students work with the medical teams caring for inpatients at two of the department's three primary teaching hospitals: University Hospital and the Baltimore Veterans Affairs and Mercy Medical Centers. Students join the interns, residents, and nurses for work rounds at 8:00 a.m. and participate in daily rounds with their attending physician from the faculty at 9:00 a.m. Conferences are held daily; some are case-based sessions facilitated by members of the faculty and are designed to teach problem solving ability. During other sessions, students join the house staff and faculty at medical grand rounds, morbidity and mortality, and ambulatory conference. During the afternoons and evenings, clerks participate in the team's care of patients. Time is spent obtaining histories, performing physical examinations, obtaining and evaluating other aspects of the patient's database, and devel-

oping diagnosis and treatment programs with the house staff and faculty. During the four weeks of ambulatory medicine, students are assigned to one of several university-based or community sites. The goal of this rotation is to introduce students to the basic concepts of ambulatory medicine. These include problem focused assessments, decisions about urgency and principles of access and continuity of care. Students may spend time in acute walk-in clinics, general medicine and primary care clinics, as well as selected subspecialty clinics.

Fourth Year

MEDC 548. Student Internship (Subinternship in Medicine). Each fourth-year student takes a subinternship in medicine, pediatrics, surgery or family practice. The student internship in internal medicine occupies four weeks, all of which must be spent on the general medical services at the University of Maryland, Baltimore Veterans Affairs or Mercy Medical Centers. Student interns work as if they were graduate physicians but under the close supervision of the resident and attending physicians. Subinterns are on-call in the hospital with their resident physicians one out of four nights. The amount of responsibility delegated to subinterns depends upon the extent of each student's knowledge, dedication and maturity. Successful completion of a subinternship in medicine prepares students particularly well for graduate internships.

Laboratory and Clinical Research Electives. The faculty of the department of medicine strongly encourages all students to join them on a full-time or part-time basis to participate in research projects being conducted in the department. This experience may be scheduled at most times of the year. Students with an interest in investigation should talk with members of the faculty or the chair about the many opportunities available in the department of medicine.

GRADUATE PROGRAM

Residency Training. Training in internal medicine continues after graduation from medical school in the department's residency program. Approximately 35-40 graduates from leading medical schools are appointed to first year residency positions on a competitive basis. Residents receive their training at University Hospital and Baltimore Veterans Affairs and Mercy Medical Centers in addition to numerous ambulatory sites. Most first year residents continue their training in internal medicine for an additional two years, thus becoming eligible for certification as diplomats of the American Board of Internal Medicine. A four-year Medicine-Pediatrics track is available to individuals interested in certification in both specialties. Also, five-year tracks in Medicine-Emergency Medicine and Medicine-Neurology are available. All residents receive intense clinical training in primary care and the medical subspecialties in a variety of ambulatory and inpatient settings under close guidance of the department's faculty. While completing the broad core curriculum, residents have the opportunity to explore clinical and basic science research areas or engage in individualized electives. Residents are expected to

develop their leadership, teaching and professional skills while gaining expertise in the vast expanse of internal medicine.

CARDIOLOGY

Herbert Berger Professor of Medicine and Head
Robert A. Vogel, MD

UNDERGRADUATE COURSES

Fourth Year

CARD 541-01. Clinical Cardiology Elective, University Hospital. Students participate in patient evaluation and examination under the close supervision of faculty members. Basic concepts of physical examination are stressed and correlated with both non-invasive and invasive techniques. The rotation includes an opportunity for adult and pediatric cardiology training in the clinics, coronary care unit and graphics laboratory with emphasis on complete patient evaluation, as well as the development of individual areas of interest.

CARD 541-07. Cardiology Elective, Baltimore Veterans Affairs Medical Center. Students spend one month participating fully in all activities of the clinical cardiology service. Experiences include medical and surgical consultations, cardiology clinic, daily readings of electrocardiograms and echocardiograms. Special student-oriented conferences on clinical and research topics in cardiology are regularly held.

POSTGRADUATE FELLOWSHIPS

Selected applicants participate in the activities of the division including responsibilities for cardiac catheterization, electrocardiographic interpretation, echocardiography and exercise testing. The fellowships begin July 1 of each year and financial stipends are provided. Application is made through the head of the division and should be completed by November of the preceding year.

DIABETES, OBESITY AND NUTRITION

Professor and Head
Alan R. Shuldiner, MD

UNDERGRADUATE COURSES—2ND-4TH YEARS

Research fellowships during the summer (8-10 weeks) and part-time and full-time during the school year are offered for students interested in intensive basic and/or clinical research. Students will be matched with a faculty member based on their research interests. Ongoing basic research interests of the division's faculty members include molecular genetics of type 2 diabetes and obesity, molecular mechanisms of insulin resistance and pancreatic beta-cell ontogeny, growth and maintenance. These research activities are performed in the Division's campus. Clinical research interests include genetic control of energy expenditure, glucose metabolism and insulin secretion in humans with type 2 diabetes and obesity, as well as clinical trials of agents to manage diabetes, obesity and their complications. This research is performed at the Joslin Center for Diabetes at the University of Maryland Hospital, as well as in the division's Amish Diabetes Research Clinic in Lancaster, Pennsylvania. Students will also receive didactic teaching in the molecular, cellular and pathophysiological basis of diabetes, and will participate in weekly seminars and journal and data presentation sessions.

POSTGRADUATE FELLOWSHIPS—BASIC AND CLINICAL RESEARCH

Full-time and part-time research opportunities are available for students interested in intensive basic and/or clinical research. Students will be matched with a faculty member based on their research interests. Ongoing basic research interests of the division's faculty members include molecular genetics of type 2 diabetes and obesity, molecular mechanisms of insulin resistance and pancreatic beta-cell ontogeny, growth and maintenance. These research activities are performed in the division's laboratories located at the Maryland Biotechnology Institute on the School of Medicine campus. Clinical research interests include genetic control of energy expenditure, glucose metabolism and insulin secretion in humans with type 2 diabetes and obesity, as well as clinical trials of agents to manage diabetes, obesity and their complications. This research is performed at the Joslin Center for Diabetes at the University of Maryland Hospital, as well as in the division's Amish Diabetes Research Clinic in Lancaster, Pennsylvania. Students will also receive didactic teaching in the molecular, cellular and pathophysiological basis of diabetes, and will participate in weekly seminars and journal and data presentation sessions.

CLINICAL DIABETOLOGY

Full-time or part-time positions are available for selected candidates who have usually completed two or more years of house officer training. The purpose of this rotation is for residents to gain an in-depth understanding of the pathophysiology of diabetes and to gain hands-on experience at managing diabetes and diabetic complications. The resident will spend three-to-five half-day sessions seeing patients at

the Joslin Center for Diabetes at the University of Maryland Hospital where state-of-the-art clinical approaches to the diagnosis and management of diabetes and its complications are practiced in an outpatient setting. The resident will work closely with the dedicated interdisciplinary Joslin staff which includes diabetologists, podiatrists, psychologists, certified diabetes educators, dietitians and exercise physiologists. The resident will also participate in the Inpatient Diabetes Consult Service, a new consult service consisting of the interdisciplinary team whose goal is to manage patients with diabetes and their complications hospital-wide including the Internal Medicine, Vascular Surgery and Transplantation Surgery services. Required weekly conferences include small group didactic teaching sessions, seminars, noon clinical conference and Endocrinology/Diabetes Grand Rounds.

ENDOCRINOLOGY

Professor and Head
John F. Wilber, MD

UNDERGRADUATE COURSES

Second Year

PATH 520. In the second semester an intensive two-week course is given in collaboration with the departments of pathology, pharmacology, pediatrics and obgyn. The course emphasizes the pathophysiologic basis for clinical disturbances of endocrine functions.

Summer fellowships of eight-to-10 weeks are also offered. These emphasize clinical or basic research training, including molecular biology.

Fourth Year

ENDO 541. Clinical Endocrinology and Metabolism Elective. Seniors are provided a broad clinical experience through a four-week concentrated period of training devoted to a study of patients with clinical disorders of endocrine function. Students are involved in the day-to-day diagnostic evaluation and management of both hospitalized patients and outpatients, and participate in weekly clinics under the direct supervision of staff members. The pathophysiologic basis for diagnostic and management aspects is presented at daily rounds and at weekly in-depth conferences, grand rounds and journal club. A separate elective of 12 weeks is also available to interested students who may desire a longer period of training and/or who wish to pursue a clinical or laboratory research project in depth.

POSTGRADUATE FELLOWSHIPS

Full-time positions are available to selected candidates who have usually completed two or more years of house officer training. All fellows conduct independent clin-

ical or basic research programs with graduated autonomy. Broad clinical inpatient and outpatient activities are designed for subspecialty board preparation. All fellows are sent to the Endocrine Society Research Training program during year I. Applications and interviews are required. Competitive stipends are offered. The fellowship program is fully integrated into the new division of diabetes, nutrition and obesity. Fellows consult on diabetics in both ambulatory and hospital settings, including the renal and pancreas transplantation program. The fellowship is a two-year program with an option for a third research year.

GASTROENTEROLOGY

Professor and Head
Stephen P. James, MD

UNDERGRADUATE COURSES

Fourth Year

GAST 544-01. Clinical Elective. This is a broad clinical experience in consultations, literature review and conferences on GI and liver problems. Students evaluate consultations with GI fellows and senior staff; plan diagnosis and management; and follow patients through definitive treatment and discharge. The rotation includes attendance at four hours of conference, 10 hours of GI clinical rounds and four hours of clinic experience weekly.

Summers Research Electives. GI, liver and nutrition electives are available and may carry a stipend. Individually arranged.

GENERAL INTERNAL MEDICINE

Medical School Assistant Professor and Head
Louis J. Domenici, M.D.

The general internist at this institution is an individual who is: 1) skilled in all facets of health care, both acute and chronic, as well as the ambulatory and inpatient level; 2) an educator of peers, students and the public; 3) interested in the impact of health care delivery and its evaluation; 4) an able administrator capable of management decision-making and planning; 5) an active participant in the affairs of the community. In addition, the division of general internal medicine provides education, clinical training and research experience for medical students and graduate trainees to the fellowship level.

The goal of the General Internal Medicine Program is to prepare physicians through inpatient, ambulatory and elective experiences during the students' clinical years and continue with an extensive graduate medical education program. The division's faculty deliver a wide range of primary and consultative health care

services for ambulatory and hospitalized patients at university clinical sites, which are also used for student and resident medical training. These clinical sites offer health care to university campus professionals, seniors, veterans and the inner city indigent.

RESEARCH INTERESTS

The broad research interests within division include curriculum development and evaluation in ambulatory education, utilization of health care by the elderly, evaluation of physician and patient behavior relevant to preventive practices, occupational exposure to asbestos and lead, nutrition among hospitalized patients and areas of primary care services to women.

UNDERGRADUATE COURSES

Selected ambulatory primary care elective experiences are offered as part of the senior ambulatory rotation in internal medicine, and there are clinical and research electives in medical consultation or on specific projects with faculty. For further information, consult the medicine section of the electives catalog. These experiences are offered on campus and at affiliated medical institutions.

GRADUATE PROGRAM

The graduate medical education program in internal medicine educates and trains physicians in the principles and practices of general internal medicine. The intent is to prepare clinicians by providing training via a broad internal medicine curriculum. Specialized training experiences are encouraged and are presently available in medical consultation and risk assessment, preventive care, rehabilitation or occupational medicine, as well as health services research. Students and residents are supervised by a team of clinician educators, practitioners and scientists in the program. The faculty include general internists, geriatricians, psychiatrists, epidemiologists, clinical pharmacists, primary care nurse clinicians and social workers.

GEOGRAPHIC MEDICINE

Professor and Head
Myron M. Levine, MD, DTPH

GRADUATE PROGRAM

Postgraduate fellowships in geographic medicine are offered in conjunction with the division of infectious diseases. Fellows spend their first year doing clinical rotations on the infectious diseases consultation services at the University Hospital, the Baltimore Veterans Affairs Medical Center, the Maryland Institute for Emergency Medical Services Systems and the University of Maryland Cancer Center. The second year is spent in clinical or laboratory research under the supervision of faculty members in the division.

Research may be conducted in the laboratories of the division in Baltimore or in one of the division's field areas in Chile or Africa. The division is closely tied to the Center for Vaccine Development. Laboratories are fully equipped for work in molecular genetics, immunology, antigen purification, routine and enteric microbiology, parasitology (including animal studies) and antimicrobial sensitivity testing. Faculty research interests include the pathogenesis and epidemiology of enteric organisms such as Vibrio cholerae and other vibrios, E. coli, Salmonella, Shigella, Yersinia, rotavirus, Giardia and Cryptosporidium. Much of the research effort is directed towards developing vaccines against these enteric pathogens as well as vaccine testing against malaria and other non-enteric diseases. The division maintains a close relationship with the department of epidemiology and preventive medicine where fellows may take courses in epidemiology and biostatistics during their training. Application for fellowships is made to Dr. John W. Warren, fellowship program director.

GERONTOLOGY

Professor and Head
Andrew P. Goldberg, MD

The goals of the gerontology division at the University of Maryland School of Medicine are to teach students and house staff the principles of gerontology and geriatric medicine, and to train fellows and junior faculty for academic careers in aging research and clinical geriatric medicine. The program emphasizes research in the biology of aging, the prevention of cardiovascular disease and the rehabilitation of disabled older people in clinical trials which examine the physiological and functional effects of exercise training and nutritional interventions. This enriched academic environment allows trainees to learn skills of clinical geriatrics and basic research for careers in gerontology.

MEDC 545-23. Geriatric Medicine Elective. There is a wide spectrum of research, clinical and educational programs for students, house staff, fellows and physicians interested in clinical training and research in gerontology and geriatric medicine. There are opportunities for research training in: 1) exercise physiology and nutrition in the management of cardiovascular disease risk factors in high-risk older patients; 2) rehabilitation and longitudinal management of the elderly to

maintain functional independence and exercise capacity to prevent institutionalization; and 3) basic mechanisms of age-related declines in cardiovascular, metabolic and musculoskeletal function. Trainees work closely with faculty members in a research curriculum that provides mentored training in clinical and basic scientific investigation and in the conduct of clinical trials. A Geriatric Research Education and Clinical Center and Claude C. Pepper Older Americans Independence Center provide resources for training in basic research, clinical medicine and health services research focused in prevention and rehabilitation of older patients with risk factors of complications of cardiovascular diseases. Academic programs in these centers seek to increase the basic knowledge of the aging process and prevent disability from cardiovascular disease through clinical trials of aggressive risk factor and rehabilitation interventions. Knowledge gained from these studies is imparted to health care providers, students and trainees through system-wide educational programs.

The clinical programs teach the principles and applications of the treatment and management of older patients with a wide spectrum of acute and chronic medical diseases and preventive geriatric medicine. Instruction is provided in primary, consultative and long-term care of patients in various clinical facilities of the University of Maryland Medical System. Trainees learn the physiology of aging and principles of geriatric assessment, preventive maintenance and the treatment and care of the older patients in ambulatory medical practices, acute in-patient services, geriatric rehabilitation units and in a comprehensive home care program for frail, homebound patients. There is clinical training in geropsychiatry to learn counseling, psychopharmacologic and ethical issues in the management of older patients with mental illness. This approach provides wide clinical exposure and training in relevant skills for an academic career or clinical practice in geriatric medicine.

POSTGRADUATE FELLOWSHIP TRAINING

The division has an accredited fellowship training program funded by the National Institute on Aging researches the effects of exercise and nutritional interventions on the pathophysiology of type II diabetes, hypertension, hyperlipidemia and changes in body composition with aging. Post-graduate training emphasizes basic and clinical research in the pathophysiology of aging-related diseases and the mechanisms by which exercise and dietary interventions prevent cardiovascular disease and disability in at-risk older people. Fellows completing post-graduate training in gerontology are eligible for board certification in geriatric medicine.

HEMATOLOGY AND ONCOLOGY

Medical School Associate Professor and Head
Barry R. Meisenberg, MD

UNDERGRADUATE COURSES

Fourth Year

HEMA 541-01. Clinical Elective. Broad clinical experience in both malignant and nonmalignant hematologic disorders is available. Students perform hematology consultations with fellows and senior staff and have the opportunity to attend multiple clinical and laboratory conferences within the University of Maryland Cancer Center. Extensive experience in bone marrow aspiration, biopsy and interpretation is provided. Rotations are for a minimum of four weeks.

MEDC 549-01. Medical Oncology Electives. Two different medical oncology electives are available: 1) students may choose a subinternship on the inpatient service of the University of Maryland Cancer Center. This provides students and postgraduate physicians with in-depth studies of the diagnosis, natural history and treatment of human cancers. Students will take an active role in the day-to-day management of patients on an inpatient cancer ward and will work closely with the attending and hematology/oncology fellow; 2) clerkships in oncology provide close interactions with fellows and oncology attendings on the oncology consult service. The wide diversity of internal medicine diseases seen during the natural history of many cancers makes this an intense course in the treatment of many internal medicine problems common to adult patients. Clerkships on the medical oncology consultation service provide interaction with other specialties in the management of as yet undiagnosed patients as well as the early detection, diagnosis and staging of malignancy. Individuals on clerkships are expected to attend a large number of conferences available on a weekly basis that provide didactic information about natural history, new treatments and evolutionary changes in the laboratory understanding of neoplasia.

Research Electives. Summer research electives in various aspects of hematologic malignancies are available. Opportunities are available to work in the cell component therapy section of the University of Maryland Cancer Center (a specialized transfusion service), an active cytogenetics laboratory, an immunology laboratory studying antigenic characteristics of malignant cells, as well as the acquired immune deficiency syndrome (AIDS), electron microscopy laboratory and laboratories engaged in the study of leukemic cell differentiation and cellular pharmacology. Stipends may be available.

HYPERTENSION

Medical School Associate Professor and Head
Elijah Saunders, MD

UNDERGRADUATE COURSES

First and Second Years

Selective lectures are given on hypertension as a part of the physiology, pharmacology, pathology and preventive medicine courses.

Fourth Year

Electives are available for fourth-year students who will be exposed to and participate in the entire program of the hypertension division. This includes experience and supervision in the diagnosis and treatment of hypertensive patients on both an inpatient and outpatient basis. Daily rounds by senior members of the hypertension division will include students electing this rotation. Students will attend the Hypertension Faculty Practice Office and participate in the care of private patients in a very busy office devoted to the care of difficult hypertension problems. Students will participate in ongoing clinical research programs when appropriate. Students may also elect to attend the weekly cardiology clinical rounds sponsored by the cardiology division and the Hypertension and Vascular Biology Center research rounds when scheduled.

Summer Fellowships

Summer fellowships in hypertension are available to junior and second-year students (who have taken physical diagnosis). Participation in clinical drug trials will be offered.

GRADUATE PROGRAM

Electives for a minimum of one month are available for house officers-in-training at the University Hospital and relevant conferences in the Baltimore community can be attended. Electives are encouraged for residents interested in cardiology, nephrology or endocrinology as well as a career in internal medicine with emphasis on hypertension. Trainees will have an opportunity to work with hypertension specialists from the Johns Hopkins University School of Medicine and School of Hygiene and Public Health, the state Department of Health and Mental Hygiene, the Hypertension Commission of Maryland, the American Heart Association and the newly formed Baltimore Alliance for prevention and treatment of hypertension and diabetes and other programs in the community which have an interest in hypertension.

Although the hypertension division does not currently have a fellowship program, training opportunities for fellows from other divisions can be arranged.

INFECTIOUS DISEASES

Professor and Head
John W. Warren, MD

UNDERGRADUATE COURSES

Fourth Year

INFE 541-01. Infectious Diseases Elective. The discipline of infectious diseases is uncommon in internal medicine in that it is not restricted to one organ system. Indeed the types of patients seen by the Infectious Diseases Consultative Service are patients in virtually all departments of the hospital. These patients are often among the most acutely ill and often pose the most difficult diagnostic enigmas within the hospital. These presentations are more than an academic challenge; many infectious diseases can be cured and the patient restored to previous health.

A practical working knowledge of clinical infectious diseases has become absolutely critical for the following reasons: (1) there has been a huge increase in the numbers of immunosuppressed people, not only from HIV infection but also from the substantial increase in bone marrow and solid organ transplant recipients, the more aggressive use of cytotoxic chemotherapy and more invasive and life-sustaining ICU modalities; (2) the explosion of new antiviral, antifungal and antibacterial agents requiring familiarity with their spectrum of action and toxicities; (3) the proliferation of multiple-antibiotic resistant pathogens which presents virtually untreatable infections; and (4) the focus upon infection control, cost containment and quality of practice which have arisen with the increased attention to the economics of health care.

The diagnosis of infections and proper management of patients with these diseases are taught by exposing students to a broad spectrum of clinical problems. The appropriate use of microbiology, virology and serology laboratories is stressed. The student sees consultations under the supervision of a full-time attending at the University Hospital and Veterans Affairs Medical Center. Specialized programs are available in AIDS, at Shock Trauma and at the University of Maryland Cancer Center. Two clinical infectious disease conferences for faculty, house staff and students are held weekly.

POSTGRADUATE FELLOWSHIPS

The postgraduate fellowship is a combined program offered by the divisions of infectious diseases and geographic medicine. The first year is clinically oriented and is spent consulting on patients with problems related to infectious diseases. A very diverse experience is obtained through rotations at the University Hospital and Veterans Affairs Medical Center, the University of Maryland Cancer Center, the solid organ transplant service, the inpatient HIV unit and the NIH. Fellows see consults and supervise residents and medical students, and spend much of their time teaching and providing patient care. This is all performed under the guidance of full-time faculty, many of whom are experts in subspecialties within infectious diseases, such as infections in transplant recipients, neutropenic host infections, surgical infections and infections in HIV-infected people. The second and subsequent years of the program are oriented toward research. Research interests in the division include molecular pathogenesis of bacterial infections, physiology of acute

inflammation, CMV, HIV, papilloma virus infections, infections in cancer patients or severely traumatized patients, and infection control and nosocomial infections. Research interests within geographic medicine include microbial genetics, pathogenesis of diarrheal diseases, pathogenesis of malarial infections, and vaccine development. Application is made through the fellowship program director.

NEPHROLOGY

Medical School Professor and Head
Matthew R. Weir, MD

UNDERGRADUATE COURSES

Second Year

MEDC 525. Human Renal Physiology. This one-month minimester course allows full-time concentration on renal and body fluid physiology with the students using themselves as laboratory subjects. Studies of renal function under different circumstances, mechanisms of water conservation, sodium balance and acid-base balance will be studied. Laboratory sessions are held daily. Appropriate case presentations will illustrate disturbances of physiology. This class is limited to 16 students and offers an opportunity for prolonged and close contact with division of nephrology faculty as well as experience in laboratory measurements and observations of renal function through personal in vivo testing.

Fourth Year

NEPH 541-01. Clinical Nephrology Elective. Students who have completed their required junior electives in medicine, surgery, pediatrics and obstetrics may elect a clinical rotation in nephrology. One-month to three-month electives will be accepted. The student is expected to become thoroughly familiar with the approach to patients with kidney diseases and acquainted with clinical procedures. Each student will present at one nephrology conference. The typical rotation involves the student in consultations with fellows and attending nephrologists, rounds on inpatients, renal clinic activities and exposure to the dialysis and organ transplantation programs. Students with special interests in particular aspects of kidney function or kidney disease may be permitted to pursue those interests after consulting with the division head.

NEPH 541-03. Nephrology Student Fellowship Elective, Maryland General Hospital. Students are exposed to the practice of clinical nephrology and to the management of acute and chronic renal failure and organ transplantation.

POSTGRADUATE FELLOWSHIPS

Qualified physicians may apply for full-time fellowships in nephrology. Although a one-year clinical fellowship may be specially arranged, the standard fellowship is for two years of training with the first year structured to produce broad experience in clinical nephrology, its procedures and its literature and basic experience in the research lab. The second year is largely elective, permitting fellows to pursue their chosen direction with planning and supervision. Additional years of experience for those undertaking special projects are available. Fellows completing this program are qualified and prepared to be certified in nephrology.

PULMONARY AND CRITICAL CARE MEDICINE

Professor and Head
Lewis J. Rubin, MD

UNDERGRADUATE COURSES

First Year

Members of the division take part in teaching the physiology course with emphasis on the clinical application to basic respiratory physiology. This includes an introduction to clinical medicine and the sessions in the course on correlative medicine.

Second Year

In the systemic pathology course, two weeks are devoted to the respiratory system. The teaching of clinical medicine is integrated with epidemiology, pharmacology and microbiology and is closely correlated with the teaching of physiology and pathology. This is not a course in respiratory diseases, but the most common and important groups of diseases are included.

Fourth Year

PULM 541-01. Pulmonary Diseases Elective. Fourth-year students participate in all of the activities of the division under the supervision of fellows and faculty. They see patients in the wards, in consultations and in the outpatient clinic. The students learn to interpret tests of pulmonary function and attend all of the conferences in which fellows and faculty participate. Emphasis is on the correlation of clinical features with pathophysiologic and roentgenographic features.

PULM 541-05. Medical Intensive Care Elective, University of Maryland Hospital. The goal of this course is to provide students with clinical experience in managing patients seen in a medical intensive care unit. Students will function at the intern level as primary physicians and will work with the resident in charge, as well as the attending physician. Students will receive a sound background in circulatory

and respiratory physiology. They will be exposed to various invasive techniques, including arterial line insertions, Swan-Ganz catheterizations and chest tube placements. In addition there will be exposure to the use of mechanical ventilation in the critically-ill patient.

POSTGRADUATE FELLOWSHIPS

Stipends are available for the support of nine fellows at the current University of Maryland Medical System postgraduate scale. Three years of training in internal medicine are required. The goal of the program is to train physicians who are competent in the subspecialties of pulmonary and critical care medicine, and in basic or clinical investigation.

RHEUMATOLOGY

Professor and Head
Marc C. Hochberg, MD, MPH

UNDERGRADUATE COURSES

First Year

Members of the Rheumatology Division participate in teaching 1) the immunology section of the microbiology course, 2) the immunopathology section of the pathology course, 3) clinical correlation in the biochemistry course and 4) the epidemiology and biostatistics course.

Second Year

The division teaches the examination of the musculoskeletal system during Physical Diagnosis. Students are provided with a copy of the Primer on the Rheumatic Diseases.

Third Year

During their rotation on medicine at UMMS or the VA Medical Center, junior medical students interact with rheumatology faculty and fellows on the rheumatology consult service and receive lectures on diagnosis and management of arthritic and connective tissue diseases. Weekly rheumatology grand rounds are open to students.

Fourth-Year Students and House Officers

The rheumatology division offers a clinical elective for senior medical students and medical house officers designed to present the spectrum of rheumatic disease and approaches to diagnosis and management. Integration of clinical features with the mechanisms of disease processes is accomplished through informal tutorial sessions

as well as didactic lectures. The rationale for the various management programs including drug therapies, physical medicine and orthopedic surgery is emphasized. Experience is gained in performance of diagnostic procedures (e.g., arthrocentesis) and in interpretation of relevant laboratory data. Patients are seen in the out-patient clinics at University Health Center and VA Medical Center, as well as in the Faculty Practice Office and on the in-patient consult service.

POSTGRADUATE FELLOWSHIPS

The division of rheumatology and clinical immunology offers a two-year clinical fellowship and a three-year research fellowship that emphasize training in both the clinical and research aspects of rheumatology. The purpose of the three-year research fellowship is to produce physician-scientists who are well trained clinically and scientifically and who are dedicated to an academic, research-oriented career. Three years of prior training in internal medicine are required.

MICROBIOLOGY AND IMMUNOLOGY

Professor and Chair
Jan Cerny, MD, PhD

Training in microbiology and immunology within the medical school curriculum occurs primarily during the sophomore year when all students are required to take medical microbiology and immunology. Emphasis is placed on medical aspects of microbiology and immunology. In addition, selected Graduate School courses are available to medical students in all years. Individual faculty members are available to provide instruction and guidance throughout the medical curriculum.

The department also offers the PhD degree and encourages students to enroll in the MD/PhD program.

RESEARCH INTERESTS

The research programs within the department of microbiology and immunology are oriented toward the molecular biology of infectious agents, foreign invader-host cell interactions and the molecular and cellular analysis of the immune response. Specific projects in immunology and cell biology include molecular analysis of antibody and T-cell receptor genes; lymphocyte activation, differentiation and ontogeny; autoimmune diseases and immunology of aging; and cellular and viral oncogenes. Projects on microbial disease mechanisms include studies on regulation of gene expression in procaryotic and eukaryotic systems, molecular genetics of pathogenic bacteria; pathogenesis of vector-borne infectious agents; and new strategies for development of vaccines. Studies on latent virus infections, including immunodeficiency viruses (HIV) and herpes viruses, are carried out jointly with

the Institute of Human Virology. Medical students are encouraged to participate in elective research programs of their interests.

UNDERGRADUATE MEDICAL PROGRAM

Second Year

Microbiology and immunology faculty have major teaching responsibility in the second-year Immunology, Host Defenses, Infectious Diseases and Epidemiology and Preventive Medicine block (Block VII). This is the first block of the second year and is 12 weeks in duration. When appropriate, faculty also teach in the Pathophysiology and Therapeutics block (Block VIII).

A number of Graduate School courses are available to qualified students. Interested students should contact the department for details.

NEUROLOGY

Professor and Chair
Kenneth P. Johnson, MD

Neurology is the study of the normal and diseased nervous system that includes central, peripheral and neuromuscular systems. Faculty members participate in courses in all four years of undergraduate medical education. Though few medical students will choose careers specializing in medical or surgical neurology or in the basic neurosciences, all medical graduates must have substantial understanding of the basic structure and function of the nervous system to perform a satisfactory neurological examination, recognize and treat the many common neurological disorders and know when to refer the patient to a neurological specialist. Of special importance is the ability to distinguish between functional and organic neurological symptoms or signs.

The discipline of neurology has maintained close ties with basic science and, by its complex but logical nature, has typified the most scholarly aspects of medicine. Recent methodological and scientific advances have created a new and therapeutically oriented specialty that is represented in the philosophy and goals of this department.

RESEARCH

Research activities at both the basic neuroscience and the clinical levels play a central role in the activity of the department. A broad program in neuroimmunology and biology includes a Demyelinating Diseases Clinical Center. In the last eight years the department has been one of the most active centers in the United States and Europe in the conduct of trials of new forms of therapy for multiple sclerosis. Basic and clinical studies in the demyelinating diseases are closely integrated.

Department members are also active in the study of cerebrovascular disease and its consequences. The Brain Attack Center engages in a wide variety of acute and post-acute clinical trials for ischemic and hemorrhagic stroke. Research includes observational intervention and outcome studies, and numerous clinical trials of investigational drugs for acute stroke. The center is also designing and initiating an innovative pilot study on the use of mobile telemedicine for accelerated pre-hospital evaluation and decreased time to treatment of acute stroke patients.

Special emphasis has been placed on the epidemiology of stroke and the application of computer sciences to the diagnosis and treatment of stroke. There is a strong related departmental program to study language disorders.

A very active program in diseases of peripheral nerve and muscle has been undertaken as well with special emphasis on the pathogenesis of Guillain-Barré syndrome and the treatment of myasthenia gravis. A highly developed program is focused on epilepsy with special interest in cases that fail medical therapy and must be considered for neurosurgical removal of the seizure focus. Active research at the molecular level is underway into neurologic degenerative diseases, especially Alzheimer's disease and Parkinson's disease.

An expanded program in neurorehabilitation has been developed. Rehabilitation sites for neurologically damaged patients are located at the William Donald Schaefer Rehabilitation Center at Kernan Hospital and at Deaton Hospital, both affiliated with the University of Maryland Medical System. Departmental faculty provide most of the medical care to these patients. Specialized research programs are being developed in the rehabilitation of stroke, head injury, spinal cord injury and multiple sclerosis patients.

UNDERGRADUATE MEDICAL PROGRAM

First and Second Years

The department of neurology faculty teaches in the first-year Neurosciences and Functional Systems blocks, and in the second-year Pathophysiology and Therapeutics block. Selected faculty members also teach in other areas such as the Cell and Molecular Biology block in the first year and in blocks where epidemiology and immunology are taught, based upon their particular research interests and expertise.

Third Year

NEUR 530. Neurological Sciences III. All members of the third-year/fourth-year class have a four-week clerkship on the neurology-neurosurgery service at the University Hospital or the adjacent Baltimore Veterans Affairs Medical Center. A didactic series of lecture-demonstrations is given by the neurology and neurosurgery staff, and students attend the combined conferences in both disciplines. In addition, students attend rounds and may assist in the performance of some procedures. Under house staff and attending staff supervision, students are responsible for the care of patients with neurological disorders in both critical care unit and ward settings as well as in out-patient clinics. (Dr. Good)

Electives

NEUR 541. Clinical Electives. After completion of the third year, students are offered a variety of clinical experiences on the neurological service at University Hospital, Mercy Medical Center, Montebello Rehabilitation Center, St. Agnes Hospital, Baltimore Veterans Affairs Medical Center and the James Lawrence Kernan Hospital. The neurologic examination of the patient is emphasized, as well as the study and application of a wide variety of specialized neurologic diagnostic techniques. Each student will become proficient in taking a neurologic history, performing a neurologic exam, formulating a reasonable diagnostic impression or differential diagnosis, a plan of investigation and management for several of the more common neurologic problems. (Neurology Faculty)

NEUR 548. Neurological Research Electives. In all four undergraduate years, a limited number of students will have the opportunity to work with individual members of the department in the following areas: 1) cerebrovascular physiology; 2) neuromuscular research; 3) neurophysiology; 4) neurochemistry; 5) neurovirology and immunology; 6) computers and neurology; 7) epilepsy; 8) degenerative disorders and 9) molecular-biology and the nervous system. (Drs. Koski, Panitch and Kittner)

Student Fellowships

Students who have completed their first, second or third years and have an interest in neurologic sciences may apply for additional training in clinical neurology or in one of the research laboratories of the department. Qualified students may receive remuneration as fellows for the 10-week fellowships taken during vacation periods.

GRADUATE STUDIES

There is a fully approved three-year residency training program in the specialty of neurology at the University of Maryland Medical System. This provides for clinical training as well as rotation through the associated basic science disciplines. In addition, fellowships are available for subspecialty neurology training, such as EEG and epilepsy, EMG and peripheral nerve disorders, stroke, neuroimmunology and neurorehabilitation. For further information contact the department chair.

REHABILITATION MEDICINE

Professor and Head
Kenneth P. Johnson, MD

The School of Medicine has developed a research and training center in the area of neurologic rehabilitation with the full knowledge that current life-saving expertise in the fields of stroke and trauma (head and spinal cord injury), combined with major technological advances in medical and surgical neurology, has saved and will

continue to provide life to the most severely disabled patients. There is no indication that the incidence of neurological disability will decrease; more likely it will increase. Specialized research programs are under way in the areas of head injury recovery, controlled reassessment of rehabilitation techniques and improved communication in aphasic patients using computer-assisted language.

The division of rehabilitation medicine is committed to the education of medical students, resident physicians, physical therapists and other allied health professionals. Expectations for the next decade indicate that the rehabilitation field in this country will require specialized training programs in addition to physiatry residency programs to supply qualified professionals in neurological rehabilitation. Accordingly, neurological rehabilitation probably will depend on other neurologists, internists, pediatricians, and neurological and orthopedic surgeons to fulfill the need. These physicians will need not only appropriate training in rehabilitation management, but exposure to the frontiers of fundamental research in neuroscience, particularly in the areas of neuroplasticity and recovery of function. To this end, a two-year fellowship program in neurologic rehabilitation has been established.

NEUROSURGERY

Professor and Chair
Howard M. Eisenberg, MD

The department of neurosurgery manages patients with a large variety of neurosurgical conditions. The department places special emphasis on cerebrovascular surgery, neuro-oncology, spinal surgery, epilepsy surgery, Gamma Knife radiosurgery and pediatric neurological surgery. Active neurotrauma service at the Shock Trauma Center offers opportunities to not only participate in clinics and the operating room, but also critical care rounds dedicated to the central nervous system.

RESEARCH INTERESTS

Two laboratories of specialized research programs are actively maintained within the department. The Cebrovascular/Ion Channel Physiology Laboratory studies cellular mechanisms regulating cerebral blood flow focusing on ion channel function in cerebral smooth muscle using the patch clamp technique. The Neuro-oncology/Molecular Biology Laboratory is devoted to the study of programmed cell death in malignant brain tumors. These basic science research activities are complemented by on-going clinical trials of pharmacological agents for treatment of cranial and spinal trauma, cerebral vasospasms and brain tumors.

UNDERGRADUATE MEDICAL PROGRAM

Third or Fourth Year (Surgical Subspecialty)

During the third or fourth year, students may choose to spend two weeks on the neurosurgical service as part of the surgical subspecialty clerkship. Opportunities are provided for observing neurosurgical procedures and participating in all service activities.

Fourth Year (Sub-Internship)

A fourth-year elective is available in general neurosurgery. The student works on the neurosurgery service for three weeks and one week on the neurotrauma service. Student responsibilities are significantly enhanced in the operating room and in providing patient care. Special preceptorships in pediatric neurosurgery, neuro-oncology and neurotraumatology are also offered.

GRADUATE STUDIES

A training program in neurological surgery is available to graduates of accredited medical schools who have completed one year of general surgical residency. The five-year program based at the University of Maryland Medical System provides residents with the opportunity to develop their general neurosurgical skills while gaining valuable experience in research and subspecialty areas.

OBSTETRICS, GYNECOLOGY AND REPRODUCTIVE SCIENCES

Professor and Chair
Carl P. Weiner, MD

The department provides a learning experience that encourages each student, regardless of ultimate career choice, to develop professional attitudes, diagnostic skills and knowledge relevant to the human female and to her sexual and reproductive systems. This experience enables each student to assume more effective responsibility for the general delivery of health care to the adolescent, adult and aging female and to the newborn.

The student is taught to recognize those patients who require special gynecologic consultation. Health-related reproductive and social issues such as family planning and sexually transmitted diseases are discussed as well as other aspects of population control, sexual difficulties, sterilization and induced abortion.

The educational material is presented to familiarize students with all sources of knowledge relevant to these subject areas. Students may extend their knowledge and skills in a direction and depth appropriate to current and ultimate career goals. Students are also encouraged to take electives in basic, clinical and social research.

The service roles focus on the general areas of obstetrical and gynecologic care. Obstetrics deals with a high-risk pregnancy population and provides excellent educational opportunities for both student and resident. Specialty clinics in endocrinology, complicated pregnancy, cancer, pre- and postoperative evaluation and family planning provide specific, specialized areas of instruction in addition to serving large numbers of patients. Cancer detection and therapy play a major part in the gynecologic program.

The department utilizes audiovisual aids to enhance the educational experience of both medical students and residents. The faculty also contributes to the postgraduate educational programs at the University of Maryland Medical System and throughout the state.

UNDERGRADUATE MEDICAL PROGRAM

The Department of Obstetrics and Gynecology faculty teaches in the first-year Cell and Molecular Biology and Functional Systems blocks, and in the second-year Pathophysiology/Therapeutics block.

Third Year

OBST. 530: Clinical Clerkship. Students are assigned to obstetrics and gynecology for a period of six weeks. As clinical clerks, they participate in the original diagnostic studies, pelvic exam, surgical procedures and postoperative care of hospitalized patients. Instruction in prenatal and gynecologic outpatient care is accomplished in our community clinics. Seminars and departmental conferences with the attending staff and house officers are employed for teaching the art of correlating observations, diagnosis and therapy. Frequent and close contact with faculty is achieved by means of a preceptorial system that assigns a group of three to four students to a member of the faculty for the entire clerkship. As an alternative to the clerkship at the University of Maryland Medical System, a similar instructional program is offered to a limited number of students by the obstetrics and gynecology departments at Mercy Medical Center and Greater Baltimore Medical Center. (Staff)

Fourth Year

OBST. 541: Obstetrics and Gynecology Elective. The student may choose to spend a four-week elective in one of five subspecialty areas: high-risk obstetrics, endocrinology, oncology, ambulatory OB/GYN, and human genetics. (Staff)

Affiliated Hospital Electives: Electives are available at Mercy Medical Center.

Several additional electives are listed with the Office of Student Affairs.

OPHTHALMOLOGY

Professor and Chair
Eve Juliet Higginbotham, MD

UNDERGRADUATE MEDICAL PROGRAM

Ophthalmology is integrated into the medical school curriculum throughout the four-year period. Introductory lectures in ophthalmology are given in the first year as part of physiology. Second-year medical students are introduced to clinical ophthalmologic techniques and common ophthalmologic diseases during the physical diagnosis course. During their medical clerkships, third-year students participate in both inpatient and outpatient examinations with ophthalmology staff.

Clinical and research electives are available during the senior year. For the clinical clerkship, time is divided between the outpatient clinic and the operating room. Patients with a wide range of diseases are seen together with faculty who have subspecialty interests. Conferences and grand rounds are included in the program. Self-instructional aids are available.

RESEARCH INTERESTS

A variety of clinical trials funded by NIH and industry are on going in the department. Infant vision, retinopathy of prematurity, ischemic optic neuropathy, glaucoma, and AIDS trials are currently in progress.

Basic research efforts of the department currently concentrate on ocular changes from diabetes mellitus and ocular toxicity of radiant energy. Other projects include biochemical effects of aldose reductase and its specific inhibitors on the lens, including oxygen toxicity to the lens, particularly as related to light-induced damage. Also, projects related to hormonal control of retinal pigment epithelium, as well as experimental ocular pathology, form a major part of the research program. Elective study opportunities exist for students in this active ophthalmic biochemical research program. Postdoctoral fellowships in ophthalmic biochemistry are also available.

GRADUATE PROGRAM

A three-year residency program providing clinical training is offered at the University of Maryland Medical System, with rotations to the Baltimore and Wilmington, Del. VA medical centers. Appointment is by application to the Department of Ophthalmology, University of Maryland Medical System.

In addition, the department also conducts graduate studies in ocular biochemistry in collaboration with the Graduate School. Facilities for postdoctoral studies are available.

PATHOLOGY

Professor and Interim Chair
Sanford A. Stass, MD

The primary goal of the Department of Pathology is the better understanding of human disease with an emphasis on mechanisms of disease and changes occurring at the subcellular level and in molecular terms. The student achieves this goal in three phases: 1) by acquiring the basic principles of pathology and applying those principles to the diagnosis and study of health care delivery as expressed in diagnostic areas such as surgical pathology, clinical pathology, cytology, forensic pathology and autopsy pathology; 2) by establishing a philosophy of critical evaluation and judgment concerning the problems of health and disease in humans; and 3) by developing feelings of personal responsibility and ethics for the practice of medicine.

The department's philosophy is that the study of disease includes both structure and function and is carried out from the level of the patient to that of the molecule.

The student is exposed to anatomical and clinical hospital pathology services with additional training at Baltimore Veterans Affairs Medical Center and other local hospitals.

UNDERGRADUATE MEDICAL PROGRAM

The Department of Pathology faculty teach primarily in the second year in the Immunology, Host Defenses, Infectious Disease, Epidemiology and Preventive Medicine block, and in the Pathophysiology and Therapeutics block. Faculty also teach in some first-year blocks. Pathophysiology and the study of the mechanisms of disease as well as morphology are stressed.

Electives

Supplementing the core program are elective course offerings for medical students. These opportunities span a wide range of departmental activities from system-oriented courses such as renal, pulmonary, neurological or cardiovascular pathology to process-oriented instruction such as environmental pathology, carcinogenesis and research seminars. The latter are conducted with the aid of a number of guest speakers who are leading authorities in their fields. Research and clinical preceptorships are encouraged.

Other courses are of more general interest and include seminars in clinical pathology or clinical clerkships in Baltimore area hospitals. Medical students also have access to courses in experimental pathology such as histochemistry, tissue culture or pathological biochemistry.

Advanced Accelerated Program in Pathology (AAPP): The AAPP admitted the first group of students in fall 1975 in an effort to permit early specialization and target-oriented education. The track in pathology begins in the freshman year. It makes use of all the resources of the Department of Pathology and includes three

types of experience: 1) exposure to the practice of pathology, 2) study of one selected field of emphasis; 3) exposure to research. Up to five students may be admitted during their first year. Students are required to fulfill all the requirements of the track; however, they are not committed to seek a career in the field of pathology. Training in the track program should provide the student with the knowledge of a one-year residency program. Time spent in training within the track program can count toward elective or residency time. (Dr. Mergner)

RESEARCH INTERESTS

Research efforts in the department of pathology focus upon the pathobiologic mechanisms of human disease at the cellular, subcellular and molecular levels. Current projects involve a broad spectrum of diseases which include cancer, immunologic disease, heart disease, shock, infectious disease and aging.

Cancer research efforts focus upon accurately defining the sequence of events within cells following their exposure to confirmed carcinogens, mutagens and environmental toxins. This involves the development of varied strategies for assaying human risk from environmental pollutants and the development of animal and fish models for human disease with environmental etiologies.

Research efforts in heart disease are directed toward providing a definitive description of the mechanisms that lead to cell death subsequent to the depletion or complete loss of oxygen supply. Identification of parameters whose manipulation might result in impeding or halting cell death and development of improved methods of therapy for preventing the damaging effects of shock are integral components of this research.

Faculty research projects focus on the delineation of the mechanism by which microbes invade and destroy human cells; the identification of microbial antigens with the capacity to elicit an autoimmune disease in the host; the study of mechanisms of immunologic injury as related to complement-mediated lysis; immune complex diseases and autoimmunity; and the analysis of the events leading to cell death as a consequence of the normal process of aging.

GRADUATE PROGRAM

The Department of Pathology offers programs of study leading to the PhD degree or the combined MD/PhD degree in medical pathology and the MS degree in pathology. Areas of concentration offered in the MS degree program are medical pathology (including anatomic pathology and clinical chemistry). The master's and doctoral programs train individuals for research and service in pathology and related fields. Research programs use modern techniques, including x-ray microanalysis, quantitative microscopy, flow cytometry with cell-sorting capability, spectrofluorometry and calcium imaging.

The program leading to the PhD in medical pathology includes comprehensive training in experimental pathology with emphasis on the pathogenesis of cell injury

and carcinogenesis; environmental pathology; and immunology. Students working toward combined MD/PhD degrees in medical pathology are enrolled simultaneously in the School of Medicine and the Graduate School in specially tailored programs designed to meet their specific goals and research interests as physician-scientists.

For details of admission requirements and course offerings, see the pathology section in the Graduate School catalog.

PEDIATRICS

Professor and Interim Chair
Ronald Gutberlet, MD

OUR VISION

To assure every child in Maryland the very best medical care available in an environment dedicated to children and their families, with services fully integrated to meet individual needs.

As the outstanding regional and community referral resource for the primary, specialty and critical care of infants and children, we commit to provide:

- Inpatient care for our sickest children and support for their families, including complete subspecialty and emergency services
- Strong community service, emphasizing preventive care, especially among at-risk populations
- Solid clinical and educational experiences for our students and residents—many of them Maryland's future pediatricians, nurses and other health care professionals
- An emphasis on laboratory and clinical investigations to ensure the leadership role we've established in children's health care research

WE BELIEVE THAT CHILDREN
ARE OUR FUTURE!

There are 16 subspecialty divisions within the department. The Division of Adolescent Medicine provides clinical care for adolescents from 12 to 21 years of age in a variety of clinical settings such as the hospital-based adolescent clinic and school-based clinics.

The Division of Allergy/Immunology/Rheumatology provides care for a diverse group of patients with special emphasis on immune deficiency diseases. The department is nationally recognized for its HIV evaluation and treatment program.

Behavioral and Developmental Pediatrics is a division that provides evaluation and treatment services both at the tertiary center and in community sites throughout the state. Care is provided for families with dysfunctional behavior and developmental problems, disabilities or handicaps. Consultation is provided to a number of local schools.

The Division of Cardiology provides exercise testing, Holter monitoring, pacemaker implants, and two-dimensional echocardiography color flow. A dedicated pediatric catheterization laboratory is the site for state-of-the-art therapeutic interventions. Comprehensive fetal echocardiographic services make the department a leader in the field.

A multidisciplinary staff of critical care specialists meets the special medical, emotional and social needs of the sickest children and their families with great compassion and skill. Many patients come to the pediatric intensive care unit via our highly respected Maryland Express Care for kids, the largest nurse-led pediatric critical care transport team in the state.

Endocrinology is an internationally recognized division for both its research program and clinical endocrine diagnostic unit. The pediatric diabetes program has joined the Joslin Center for Diabetes at University of Maryland, a world renowned program in diabetes care.

The Division of Gastroenterology and Nutrition is a resource for children with hard-to-diagnose gastrointestinal problems. This is the country's first center for diagnosis and treatment of celiac disease. The division partners with the Center for Vaccine Development to do research on infectious diarrhea and vaccine development.

As an affiliate of a major national cancer network, the Division of Hematology/Oncology affords patients expert information, hard-to-get experimental drugs, and state-of-the-art test and treatment regimens. A team of physicians, nurse clinicians, social workers and child life specialists provides sensitive medical care for children and emotional support for families.

Through the Division of Human Genetics, genetic, pediatric and obstetric expertise is integrated to provide clinical and laboratory services for diagnosing and managing genetic disorders. We offer comprehensive genetic evaluations, genetic testing, and prenatal diagnosis and counseling.

Unique in the United States is the Division of Infectious Disease and Tropical Pediatrics. The mission of this division includes ongoing consultation with the Agency for International Development, the World Health Organization and the Pan-American Health Organization. Many of the faculty are also members of the School of Medicine's Center for Vaccine Development.

The Division of Neonatology provides advanced tertiary care for the smallest and sickest newborns. The state-of-the-art, 40-bed NICU is the largest in the state. The division collaborates with its counterpart at Johns Hopkins Hospital in providing transport of critically ill neonates from community hospitals to a tertiary center for intensive care.

Within the Division of Nephrology, a multidisciplinary team composed of a physician, social worker, dietitian, child life specialist, teacher and psychologist

work together as a team. They strive to help patients with chronic renal disease maintain a lifestyle as similar as possible to that of healthy children.

Clinical care in the Division of Neurology focuses on developmental disabilities, progressive degenerative disorders and epilepsy. The Pediatric Headache Clinic is one of only two such clinics in the United States.

The Division of Pediatric Medicine is comprised of a group of academic generalists committed to primary patient care, education and clinical research. The faculty within this division precept the residents for their longitudinal continuity clinic experience. In addition, the Community Practice Program, spearheaded by a member of this division, provides a complementary continuity experience in the community. A major area of expertise in the division is child abuse and neglect. Faculty act as child advocates in the courts as well as advocating on state and national levels.

The PhD faculty within the Division of Pediatric Research have a primary mission to conduct bench research. These scientists collaborate extensively with clinicians. The focus of this division is to conduct studies in developmental biology with a special emphasis on mental retardation and Sudden Infant Death Syndrome.

In addition to the work in this division, each of the other specialty divisions does research within its own area of expertise. The department ranks among the top 10 of all public university pediatric departments in federal research grant awards, with more than $7.5 million in funding to the department independently and in collaboration with other departments. Grants and contracts total more than $16 million.

The Sudden Infant Death Syndrome (SIDS) and Pediatric Sleep Disorders Institute combines research and therapeutic services for infants at risk for SIDS. For older children at risk for obstructive sleep apnea or narcolepsy, overnight sleep studies are conducted and interpreted.

In addition, the department has a program in international health. Faculty at University and Mercy Medical Center who have experience and ongoing interest in this area have developed liaisons in both Chile and Uganda. Residents interested in taking advantage of this opportunity can learn first-hand the interaction and impact of social, economic, cultural and biological factors on health and disease.

OUR COMMUNITY PARTNER

Mercy Medical Center provides patient care and educational experiences which complement those activities at University Hospital. A NICU, full-term nursery, general inpatient unit, pediatric clinic and urgent care center provide a wealth of opportunities for residents and students to learn the practice of pediatrics from a community vantage point. Mercy is an affiliate and its staff are members of the faculty at University. Here students and residents benefit from their interaction with the practicing community pediatricians.

GRADUATE EDUCATION

The Division of Graduate Education coordinates the graduate residency training programs. In a carefully balanced program of primary care, tertiary care and research, residents are prepared for careers in primary care medicine as well as for competitive fellowship positions. In addition to the training program in categorical pediatrics, training programs in Medicine/Pediatrics and Pediatrics/Emergency Medicine are also available. The combined programs foster interactions with colleagues who have expertise in other disciplines.

A structured, didactic curriculum complements the broad clinical training. Formal teaching conferences as well as informal teaching rounds combine to enhance the educational process. Residents are certified in neonatal and pediatric advanced life support. Programs are fully accredited by the Accreditation Council for Graduate Medical Education.

In addition to the three residency training programs, several fellowships are available. The divisions of Adolescent Medicine, Behavior and Development, Critical Care, Endocrinology, Infectious dDseases and Neonatology offer accredited fellowships that provide graduates the opportunity to become board-certified subspecialists. Post doctoral fellowships in genetics are available in clinical cytogenetics, clinical molecular genetics and clinical biochemical genetics. Postdoctoral training experience is also available in the Division of Infectious Disease and tropical Pediatrics.

UNDERGRADUATE MEDICAL EDUCATION

First Year

Pediatric faculty participate in the Human Behavior block, as well as the Introduction to Clinical Practice Course. During the latter experience, students begin to learn the art of clinical medicine through patient interviews and observation in various clinical sites. Pediatric faculty also participate as facilitators for the problem-based learning curriculum.

Second Year

During physical diagnosis, students work with pediatricians on campus and in community sites in acquiring the skills necessary to perform a pediatric history and physical examination. The faculty also contribute to the didactic lecture series that ties basic science to the practice of medicine through clinical correlates.

Third Year

Each student spends a total of six weeks in pediatrics. The goal of this experience is to provide students with an exposure to preventive care through child health supervision as well as an exposure to common problems and illnesses. Students learn to provide developmentally appropriate care for the whole child in the context of the family unit. This is accomplished through clinical experiences in primary care clinics and practices, specialty clinics, the pediatric emergency department, nursery and

inpatient unit. A specially designed didactic curriculum and case discussion series, with faculty tutors, enhance and solidify the clinical experience. Longitudinal continuity clinic experiences are also offered for students interested in fulfilling this requirement in pediatrics.

Fourth Year

A number of exciting opportunities are available for senior students wishing to get a more in-depth experience in pediatrics.

One-month acting internships are available on the general ward service as well as in the neonatal and pediatric intensive care units.

Ambulatory experiences both at University and Mercy Medical Center afford students the opportunity to see a large volume of children with a variety of clinical problems.

Elective opportunities are also available in each of the subspecialty divisions outlined above. An elective month in a given subspecialty allows the student to focus on both inpatients and outpatients who are followed by the faculty in that division.

Students assigned to a longitudinal continuity clinic experience in our ambulatory center have the option of continuing this experience during their senior year.

A number of faculty within the department function as clinical advisors for students who wish to pursue residency training and ultimately a career in pediatrics.

PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS

Professor and Chair
Edson X. Albuquerque, MD, PhD

The department's teaching objectives are to provide medical and graduate students with those principles underlying the distribution, metabolism, mechanism of action and toxicity of therapeutic agents or substances. An overriding goal of the medical school teaching program is to convey the fundamental principles of basic and clinical pharmacology and therapeutics through an interdisciplinary teaching effort which brings together faculty from this department and those from other basic science and clinical departments. The faculty of the Department of Pharmacology and Experimental Therapeutics therefore provide substantial leadership and participation in the Pathophysiology and Therapeutics course given during the second year of the medical curriculum. When needed, the department also provides its teaching expertise to other courses throughout the four years of the medical curriculum.

GRADUATE PROGRAM

At the graduate level, there are three defined areas of study (tracks): oncopharmacology, neuropharmacology and pharmacological biotechnology. All three tracks incorporate: 1) training in modern techniques of pharmacology (molecular biol-

ogy, receptor biochemistry, cell biology, tissue culture, radioimmunoassay, electron microscopy, traditional electrophysiology, patch clamping, etc.); 2) research directed toward the study of new drugs and increasing effectiveness of existing drugs used in treatment of human diseases; and 3) research to better understand actions of drugs and toxins on various organ systems. The department welcomes medical students into graduate research through the MD/PhD Program.

The Graduate School catalog describes the graduate courses and electives which are also available to medical students and includes introductory courses for each of the three tracks (neuropharmacology, oncopharmacology, pharmacological biotechnology). Some of the available courses are: biochemical pharmacology, developmental neurobiology, endocrine pharmacology, fundamentals of membrane transport, fundamentals of pharmacology, introduction to membranes, ion channels, molecular neuropharmacology, molecular oncopharmacology, pharmacological biotechnology, and synaptic physiology and pharmacology.

Faculty also offer elective summer courses tailored to the didactic and research needs of individual students. Students should consult the coursemaster or graduate program director for further details.

PHYSICAL THERAPY

Associate Professor and Chair
Mary M. Rodgers, PhD, PT

The School of Medicine offers an entry-level Master's in Physical Therapy (MPT) Program. As an integral part of the health care delivery team, students and faculty strive to provide the best possible health care and service to their community and state. To meet these standards, the department maintains a well-equipped faculty practice clinic and state-of-the-art, active research laboratories for faculty and students.

Students complete a minimum of three years of preprofessional course work prior to beginning their studies on this campus, and three years of professional course work at the University of Maryland, Baltimore leading to the MPT degree. In the third year, students have the opportunity to select elective courses which vary according to student demand and faculty expertise.

Clinical education is an essential part of the department's Physical Therapy program. The department is affiliated with more than 275 clinical facilities throughout the country. Clinical experiences are provided in general acute, rehabilitation, orthopedic/sports medicine, neurology, pediatric, geriatric, extended care, critical care, home health and community health settings locally and throughout the United States. The clinical education program is divided into three practicum periods totaling 26 weeks of full-time experience. During the clinical practicums, the student has the opportunity to integrate knowledge gained from courses and to expand skills in evaluation, treatment and interpersonal communication.

The faculty of the Department of Physical Therapy has research interests that are dedicated to understanding physical dysfunction and determining most effec-

tive treatment paradigms. The varied backgrounds of the faculty ensure an interdisciplinary approach in research, and collaborative projects with other departments. Current projects are related to the general areas of development, aging and response to exercise or electrical stimulation applied to specific clinical populations of wheelchair users, lupus, stroke and Parkinson disease. MPT students are encouraged to participate in research activities as hourly workers and/or as an elective experience.

The MPT degree is also available to those who have completed an entry-level bachelor's degree in physical therapy. The length of study expected is one to two years, depending upon full- or part-time enrollment and the therapist's background. Another post-professional opportunity is scheduled to start in fall 1998 when the department will offer an interdisciplinary doctorate in physical rehabilitation science.

For additional information contact:

Department of Physical Therapy
University of Maryland School of Medicine
Allied Health Building
100 Penn St.
Baltimore, MD 21201
(410) 706-7720

PHYSIOLOGY

Professor and Chair
Mordecai P. Blaustein, MD

The Department of Physiology provides lecture, laboratory and seminar courses in the principles of human physiology for medical students. Also offered are advanced courses in specialized areas of physiology for graduate students, fellows and interested medical students (see Graduate School catalog).

RESEARCH INTERESTS

The faculty of the Department of Physiology is dedicated to elucidating fundamental new information about the mechanisms that underlie physiological processes. Many of the department's research programs focus on four general areas: cell and membrane physiology, neurobiology, endocrinology and cardiovascular/renal physiology. The research programs encompass a number of topics with direct clinical relevance, including projects related to cardiac arrhythmias, reproduction and contraception, diabetes, cancer, epilepsy and hypertension. Medical students are encouraged to participate in research activities during summer and

other elective periods. Opportunities for combined MD/PhD training are also available.

UNDERGRADUATE MEDICAL PROGRAM

First and Second Years

The Department of Physiology is a major participant in the freshman curriculum with faculty teaching primarily in Neurosciences (Block V) and Functional Systems (Block VI) in the first year.

Other Opportunities: Various elective courses, advanced seminars and research in special areas of physiology are open to interested students during the independent study or senior elective period or other free time. A combined MD/PhD program requiring additional coursework and original research is offered for highly qualified medical students. (See Graduate School catalog for additional advanced courses.)

Fourth Year

MPHY 542: Seminars in Physiology Elective. Advanced seminars in selected fields of physiology (e.g.; cardiovascular, renal, endocrine and neural) are offered, usually two each semester.

MPHY 548: Research Elective in Physiology in Selected Fields. Students may elect to carry out independent research programs in faculty laboratories.

PSYCHIATRY

Professor and Chair
John A. Talbott, MD

The goal of undergraduate psychiatric education is to assist students in acquiring an understanding of and an appreciation for the application of behavioral and psychiatric principles in patient care and health maintenance through an exposure to a progressive sequence of intellectual stimulations, clinical experiences and appropriate professional socialization within the interdisciplinary framework of the new curriculum. More specifically, the curriculum aims to assist the student in: 1) acquiring a foundation of knowledge regarding the biological, psychological, sociological and humanistic aspects of the practice of medicine; 2) mastering basic interpersonal and psychiatric skills relevant to the management of patients with medical and/or emotional illness; and 3) emulating attitudes and values that enhance the professional roles and practices of a physician.

UNDERGRADUATE MEDICAL PROGRAM

First Year

Psychiatry faculty teach in Blocks II, V and VI of the freshman curriculum.

Human Behavior. The Department of Psychiatry takes the lead in teaching the Human Behavior block which integrates information about human behavior from the biological, behavioral and social sciences as it applies to health, illness and treatment across the life span in our multicultural environment. The block introduces the important biopsychosocial framework, stressing the interacting influences of neurobiological, psychological and sociocultural factors on human behavior, illness and physician-patient interactions. The block is made up of lectures, small group sessions, demonstration/discussion periods and problem-based learning (PBL) groups. Psychiatry faculty contribute heavily to instruction and also serve as small group leaders in the Introduction to Clinical Practice Course.

Second Year

Psychopathology. This area of study is now taught as part of the Neuroscience module of the Pathophysiology and Therapeutics course in the second year and through additional interdisciplinary teaching in other relevant systems (e.g., cardiovascular, endocrine, etc.) within the new curriculum. The module is designed to provide students with the basic concepts of pathophysiological and therapeutic interventions relevant to the neurosciences. This contains the core areas of clinical psychiatry, including psychopathology and the psychiatric treatment of mental disorders. The module seeks to foster an integrative approach to teaching by combining the knowledge and skills of faculty from the department's of Psychiatry, Neurology, Pharmacology, Pathology, Epidemiology & Preventive Medicine, Neurosurgery and Anesthesiolgy. The course format is based on lectures, audiovisual demonstrations (videotapes, live simulcast clinical interviews) small group discussions, problem-solving sessions and assigned readings for self-study.

Psychiatric Interviewing/Mental Status Examination. This component is part of the second-year Introduction to Clinical Practice (ICP) course which is devoted to specialty physical diagnosis and examination. The psychiatric course is devoted to psychiatric interviewing, history taking and the mental status examination. A general introductory lecture is followed by a series of two four-hour small group sessions where each student performs a live psychiatric interview, observes fellow students performing interviews, and reviews interviewing techniques and psychopathologic concepts with the small group preceptor. Attempts are made to expose the students to patients with psychotic, affective and addictive disorders in their small groups of four to five students.

Third Year

Junior Psychiatry Clerkship (four weeks). The junior year provides the main clinical psychiatric experience for University of Maryland medical students. The psychiatry clerkship is now offered in collaboration with the Department of Neurology's clerkship in a required, combined eight-week experience in the junior

year. This combined course still provides the student with a core psychiatric experience in addition to providing some integrative experiences with neurology.

The core four-week psychiatry experience combines acute inpatient, outpatient, consultation, addiction and emergency psychiatry assignments in which the student is exposed to an array of psychopathologies in a variety of treatment settings. Pharmacologic, psychotherapeutic, biological and psychosocial treatment modalities are utilized.

Students work under the preceptorship of a psychiatry attending and resident while assigned to the inpatient services. Four hospitals are utilized for these assignments. They include the University Hospital, the Baltimore VA Medical Center, the Walter P. Carter Center and Spring Grove Hospital. Students are assigned approximately three patients from the inpatient team and serve as their primary medical manager under the direction of the resident and attending psychiatrist. This responsibility and involvement with patients provides an ideal setting in which the student may apply the biopsychosocial concepts learned in the first-year behavioral social sciences course with the concepts of psychopathology and clinical skills of psychiatric interviewing, history taking and mental status examination acquired in the second-year courses. The student assumes an integral role on the multidisciplinary team and ward milieu.

Students are also given clinical exposure to patients with psychiatric or behavioral problems in a variety of other treatment settings. These are generally comprised of two four-hour per week assignments with psychiatric faculty in outpatient and consultation settings. Current assignments include a university consultation-liaison service, an urgent care walk-in clinic, an addiction consultation service, a primary care clinic, community mental health clinics, a geriatric psychiatry clinic, a child psychiatry clinic and a partial hospitalization program.

The scope of seminars includes the following: review of psychopathology, childhood behavioral disorders, addiction psychiatry and psychopharmacology, as well as a clinical case conference focusing on interviewing, diagnostic and treatment skills. In addition, there is a monthly combined case conference with specially selected patients with neuropsychiatric illnesses. Faculty from both neurology and psychiatry attend this conference.

Students are assigned night-call with a psychiatric resident and additionally are precepted in the psychiatric emergency service as part of their rotation. Other opportunities for educational enrichment include a precepted experiential visit to a community 12-step program (e.g.; AA, NA) and observating electroconvulsive therapy. Evaluation is based upon individual preceptor evaluations (2/3) and a national board multiple-choice examination (1/3).

ELECTIVES

The Department of Psychiatry offers elective courses in all four years of the medical school curriculum. Elective courses offered in the senior year are numerous and include in-depth psychiatric experiences in: inpatient, community psychiatry,

emergency psychiatry, forensic psychiatry, child psychiatry, geriatric psychiatry, substance abuse, consultation/liaison psychiatry and research electives.

Combined Accelerated Program in Psychiatry—CAPP Program. This elective track has become nationally visible for its success in engaging students in psychiatry through an advanced four-year curriculum that begins in the freshman year. The program has continued to admit 12 freshman students each year. From the first month of the freshman year, the track provides an unfolding progression of combined small group seminars and clinical experiences in the behavioral sciences and clinical psychiatry.

RADIATION ONCOLOGY

Professor and Chair
Carl M. Mansfield, MD, ScD, FACR, FACNM

Radiation Oncology is a speciality devoted to the treatment of benign and malignant tumors. Fifty-eight percent of all cancer patients will at some point during their disease need or be eligible for radiation therapy. Fifty percent of all patients being treated in the department are being treated for a cure. Approximately 30 percent of patients treated for a cure are being treated with radiation therapy as a sole method of treatment and as the method of choice to achieve a cure.

Cancer is a complex disease. The modern and also the best approach to treating this disease is multi-modality therapy. Evidence suggests that this approach cancer offers a patient the greatest chance of survival. This requires a multi-discipline approach to the evaluation and treatment. Emphasis will be placed on the principles of radiation oncology, radiation biology, and radiation physics. The student will be taught to value the importance of the combined modality approach through lectures, actual case presentation, demonstrations and participation in new patient and follow-up clinics. The student uniquely will receive experience in the examination and diagnosis of physical findings associated with the pathology of malignant diseases. There will be teaching in the area of tumor pathology, biology, and behavior. The student will be made aware of the role of radiation oncology and the indications for its use in the management of patients with cancer.

RESEARCH INTERESTS

Departmental research efforts are focused upon many areas of oncology. The use of radiation as a systemic treatment agent, brachytherapy, hyperthermia, neuro-oncology, stereotaxis, conformal therapy, 3-D treatment planning, CT simulation, microcirculation of tumors, tumor microenvironment, molecular oncobiology and fractionation schemes represent several departmental research interests.

UNDERGRADUATE MEDICAL PROGRAM

Third Year

During a three-week rotation through Radiology, Radiation Oncology and Nuclear Medicine, students will spend three days in Radiation Oncology. A series of lectures and demonstrations familiarize students with the principles of the specialty. Students also participate in conferences, clinics and direct patient management.

Fourth Year

Elective in Radiation Therapy. Students interested in oncology are offered an opportunity to participate as members of the radiation oncology team. They become familiar with the evaluation, management and follow-up of cancer patients. Included are treatment planning, dosimetry, the use of interstitial and intracavitary sources of radionuclides, remote afterloader and stereotactic radiotherapy.

GRADUATE PROGRAM

An approved four-year residency program in Radiation Oncology is offered at the University of Maryland Medical System. Teaching is carried out through didactic lectures, clinics and numerous teaching conferences, with emphasis on patient care, under the supervision of full-time staff. Elective time is spent in related oncological specialties to promote the multidisciplinary concept of managing cancer patients. The department enjoys state-of-the-art equipment and operates several sites both on and off- campus, which include: the University Physicians Professional Building, a new main facility in the Gudelsky Tower of the University of Maryland Medical System, and Central Maryland Oncology Center in Columbia, MD.

SURGERY

Professor and Chair
Bruce E. Jarrell, MD

The Department of Surgery is organized into 11 divisions: General Surgery, Emergency Medicine, Orthopedic Surgery, Otolaryngology-Head and Neck Surgery, Plastic and Reconstructive Surgery, Trauma and Critical Care, Surgical Services for Infants and Children, Transplantation Surgery, Thoracic and Cardiovascular Surgery, Urology and Vascular Surgery. Many faculty participate in the teaching of anatomy, pathology and physiology, and almost all participate in formal courses offered during the clinical years. During the junior year, all students must complete the 12-week clinical clerkship in surgery. Six weeks are spent in general surgery with the remaining time divided among specialty rotations of the students' choosing. The general surgical clinical rotations are based at the University of Maryland Med-

ical System, Mercy Medical Center and the Baltimore Veterans Affairs Medical Center.

Electives in surgical research and summer fellowships are available to students in all four years. More extensive clinical experience with greater patient responsibility is offered by all divisions as subinternships and electives during the fourth year.

The surgical clerkship exposes the student to disease entities that can or should be treated by operative intervention and to the physiologic and metabolic consequences of such intervention. Students learn to recognize conditions that will require surgical consultation. They gain an appreciation of wound care as well as familiarity with basic emergency procedures. This course of study enables the future family practitioner, internist, pediatrician or psychiatrist to discuss probable treatment and prognosis of various surgical diseases with their patients. Further, students are given the opportunity to explore various surgical disciplines and to participate fully in the daily activities of the surgical teams.

Graduates of approved medical schools may be considered for residencies in General Surgery, Emergency Medicine, Neurological Surgery, Orthopedic Surgery, Otolaryngology-Head and Neck Surgery, Pediatric Surgery, Plastic and Reconstructive Surgery, Surgical Critical Care, Thoracic and Cardiovascular Surgery and Urology.

GENERAL SURGERY

Professor and Head
Barbara L. Bass, MD

UNDERGRADUATE MEDICAL PROGRAM

First Year

Faculty members of the Department of Surgery participate in the Structure and Development, Neurosciences, and Functional Systems blocks of the first year of the undergraduate curriculum.

Third Year

The teaching of general surgery is conducted on the inpatient services of the University of Maryland Medical System, Baltimore Veterans Affairs Medical Center and Mercy Medical Center. Students are divided into groups for continuous assignment to individual patient services. Selected patients are assigned to individual students who are expected to record a complete history, the results of a physical examination and required laboratory studies. The differential diagnosis, final diagnosis and recommendations for therapy must be developed. Operating room participation, supervised direct patient care and attendance at outpatient clinics are required as part of the emphasis on continuity of patient responsibility. The program is designed to provide the student with a broad overview of the fundamentals

of the discipline in the clinical environment by emphasizing contact with a wide variety of adult and pediatric patients. Clinical problems encountered usually include surgical infections, neoplasms, trauma, endocrine disorders, vascular disease, gastrointestinal problems, metabolic disorders and congenital defects.

The student is responsible for a core curriculum of surgical knowledge. Emphasis throughout the course is placed on problem solving through correlation of basic science information with clinical diagnosis and management. Didactic instruction is provided through lectures, small discussion groups, clinical conferences and grand rounds. Final evaluation is based upon clinical performance and a comprehensive examination.

Fourth Year

The Department of Surgery offers four-week subinternships in general surgery at University Hospital and the Veterans Affairs and Mercy Medical Centers for those students interested in a career in surgery or seeking to expand their knowledge of surgical science. Various clinical electives in general surgery are offered at the University of Maryland Medical System, Mercy Medical Center and York Hospital. Electives include general surgery, trauma surgery, vascular surgery, transplantation surgery and surgical intensive care.

Senior students are expected to be an integral part of the surgical team. Under supervision, they assume responsibility for initial patient evaluation in the clinics and emergency room, participate in pre- and postoperative care, attend the operating room, participate in clinical conferences and take night call.

GRADUATE PROGRAMS

A fully accredited residency in general surgery is based at the University of Maryland Medical System, incorporating important clinical experience at Mercy Medical Center and the Baltimore Veterans Affairs Medical Center. The program offers five years of clinical experience with graded responsibility and one year of basic investigation. Additionally, a fellowship in surgical endoscopy and laparoscopic surgery is available.

EMERGENCY MEDICINE

Professor and Head
Brian J. Browne, MD

UNDERGRADUATE MEDICAL PROGRAM

Third Year

During the third year, students are able to evaluate patients in the emergency room setting as part of the various surgical teams to which they are assigned during the

basic surgical clerkship. They begin to establish priorities for expedient formulation of differential diagnoses and prompt intervention.

Fourth Year

The Division of Emergency Medicine offers a one-month elective during the senior year. Under direct supervision, the student functions as an intern, evaluating the patient by means of a complete history and physical examination and appropriate laboratory studies. Faculty offer monthly anatomic laboratories during which students learn minor procedures and suturing techniques. Didactic sessions include lectures and teaching rounds. Each student spends one shift riding an ambulance with Baltimore City paramedics.

GRADUATE STUDIES

The University of Maryland offers an accredited three-year residency program in emergency medicine. Residents rotate through Mercy Hospital, the R Adams Cowley Shock Trauma Center, as well as the University Hospital, which is the principal teaching facility for the program.

ORTHOPEDIC SURGERY

Professor and Head
Andrew R. Burgess, MD

UNDERGRADUATE MEDICAL PROGRAM

Third Year

As part of the basic surgical clerkship, general principles of orthopedic surgery are taught and students are introduced to fracture recognition and management, orthopedic reconstructive surgery and to common outpatient conditions affecting the musculoskeletal system. Students electing a clinical rotation during the clerkship participate in patient diagnosis and treatment, as well as operative procedures. They receive practical instruction in the use and application of various splints and casting techniques. Student conferences and didactic sessions are conducted to supplement the division's intensive academic program.

Fourth Year

Senior students may participate in one-month electives during which they obtain internship-level clinical and surgical experience. The elective is offered on each of the University Hospital services and at the Shock Trauma Center. Students participate in weekly orthopedic conferences and seminars. Each of the senior electives is under the direction of a full-time member of the orthopedic faculty.

GRADUATE STUDIES

The Division of Orthopedic Surgery offers an accredited four-year residency program. Clinical and surgical experiences are obtained on the foot, hand, tumor and chronic spine services at the University Hospital. Experience with major trauma and spinal injury is obtained at the Shock Trauma Center. The pediatric orthopedic service is based at the James Lawrence Kernan Hospital. An intensive academic program in basic science and clinical orthopedic surgery has been developed for resident education. Each resident has a mandatory research assignment.

OTOLARYNGOLOGY—HEAD AND NECK SURGERY

Assistant Professor and Acting Head
Paul F. Castellanos, MD

UNDERGRADUATE MEDICAL PROGRAM

Third Year

The division provides an introduction to the diseases of the head and neck. Exposure to patients with communication disabilities and impairments in hearing, speech or language also occurs. Through lecture and direct tutorial instruction, students obtain clinical experience ultimately relevant to a wide variety of fields, including family practice, pediatrics, general surgery, neurosurgery and psychiatry, as well as otolaryngology-head and neck surgery.

Third-year students who elect otolaryngology-head and neck surgery as part of the surgical clerkship are introduced to the care of patients with diseases of the ears, nose and throat. Introductory speech pathology, auditory physiology and basic audiologic techniques are presented to each group. Fundamental elements of otolaryngologic diagnosis and therapy are stressed.

Fourth Year

A one-month elective in clinical otolaryngology-head and neck surgery is offered at the University Hospital. The student functions as an integral member of the patient care team.

GRADUATE STUDIES

A fully accredited four-year residency program in otolaryngology-head and neck surgery is offered at the University Hospital. Residents must complete one year of general surgical training prior to entering this program.

PLASTIC AND RECONSTRUCTIVE SURGERY

Professor and Head
Nelson H. Goldberg, MD

UNDERGRADUATE MEDICAL PROGRAM

As part of the basic surgical subspeciality clerkship, students may elect a rotation on the plastic surgery service at the University Hospital. Emphasis is placed on learning the principles of wound healing, wound care and reconstruction of post-traumatic or ablative defects. Students are also introduced to the treatment of congenital abnormalities and cosmetic problems in both the inpatient and ambulatory environments. Daily teaching rounds provide students with an opportunity to participate in case presentations. Students accompany patients to the operating room and attend all teaching conferences.

A one-month elective is available to senior students interested in plastic and reconstructive surgery. Under supervision, the student functions as a subintern taking responsibility for pre- and postoperative care of selected patients.

GRADUATE STUDIES

The University of Maryland, Baltimore and Johns Hopkins University offer a combined three-year residency program in plastic and reconstructive surgery. Each year, three residents enter this fully accredited residency training program and, upon completion, are eligible for examination by the American Board of Plastic and Reconstructive Surgery. Training takes place at the University Hospital, the Johns Hopkins Hospital, the R Adams Cowley Shock Trauma Center, Bayview Medical Center, Union Memorial Hospital, and the Baltimore Veterans Affairs Medical Center.

SURGICAL SERVICES FOR INFANTS AND CHILDREN

Professor and Head
J. Laurance Hill, MD

UNDERGRADUATE MEDICAL PROGRAM

Third Year

The Division of Surgical Services for Infants and Children aims to provide students with a perspective on the unique problems encountered by families, physicians and nurses when caring for patients with pediatric surgical illness, to teach management

of these often complex problems and to introduce the delicate surgical techniques developed especially for young patients.

As part of the basic surgical clerkship, students may elect to spend three weeks with the pediatric surgical team. Each is assigned patients to evaluate preoperatively, to accompany to the operating room and to help manage during the postoperative period. Emphasis is placed on differential diagnosis, embryology, anatomy and developmental pathophysiology. Patients range in age from prematurity to adolescence. Exposure to the nursery, pediatric emergency room and intensive care units is an integral part of the experience. Didactic instruction is provided in the operating room, during teaching rounds, by case presentations and in conferences.

Fourth Year

During the senior year, students may choose a one-month elective on the pediatric surgery service functioning, under supervision, as a subintern.

GRADUATE STUDIES

The University of Maryland at Baltimore-Johns Hopkins University integrated training program in pediatric surgery offers an accredited two-year residency. The program requires board eligibility in general surgery with candidates applying during the fourth or fifth year of general surgery training. This residency participates in a match program with 33 centers in the United States and Canada.

THORACIC AND CARDIOVASCULAR SURGERY

Professor and Head
Joseph S. McLaughlin, MD

UNDERGRADUATE MEDICAL PROGRAM

Third Year

The basic surgical clerkship includes a rotation on the cardiothoracic service. Students participate, along with the resident staff, in all service activities, patient care responsibilities and teaching conferences.

Fourth Year

The goal of the one-month senior elective in cardiothoracic surgery is to present, in a clinical setting, the basic pathophysiologic principles of thoracic and cardiovascular surgery. The student becomes an integral member of the patient care team and, under supervision, participates in the capacity of an intern. Emphasis is placed on diagnosis and management of the patient with surgical heart disease.

GRADUATE STUDIES

The three-year residency program is accredited by the Residency Review Committee of Thoracic Surgery. Applicants must be eligible for the American Board of Surgery examination on admission to the program. Residents are given an opportunity to assist and then perform all types of cardiothoracic operative procedures, with a particular emphasis on adult cardiac and general thoracic surgery.

TRANSPLANTATION SURGERY

Professor and Head
Stephen T. Bartlett, MD

UNDERGRADUATE PROGRAM

Third Year

The basic surgical clerkship includes a rotation on the cardiothoracic service. Students participate, along with the resident staff, in all service activities, patient care responsibilities and teaching conferences.

Fourth Year

The goal of the one-month senior elective in transplant surgery is to understand and assist in the management of patients with renal, pancreas and hepatic transplants. This includes the basic understanding of immunosuppression, clinical immunology, the technical aspects of each procedure, organ donation and removal and complications of transplantation. The students are exposed to a large volume of patients and intense clinical service.

GRADUATE PROGRAM

An accredited fellowship program in transplantation surgery is available to candidates who have completed residency training in general surgery. This one-year program is based at the University of Maryland Medical Center. Fellows may elect to spend an additional year devoted to clinical research.

TRAUMA AND CRITICAL CARE

Professor and Head
Thomas Scalea, MD

UNDERGRADUATE MEDICAL PROGRAM

Third Year

All students follow their assigned patients during critical care unit stays as part of each rotation during the basic surgical clerkship. In addition, a three-week rotation in the surgical intensive care unit may be selected as part of the clerkship experience.

Fourth Year

During the fourth year, a one-month elective is available in the surgical intensive care unit. The student receives intensive exposure to all aspects of surgical critical care. Didactic conferences and teaching rounds are an important part of the experience. This elective is excellent preparation for residency training.

GRADUATE STUDIES

Fellowship training in surgical critical care is available in a fully accredited one-year program. Clinical experience is obtained at the University Hospital and the Shock Trauma Center. Candidates must have completed general surgical training to be eligible for this program. Research fellowships are available through a Trauma Training Grant awarded by the National Institutes of Health.

UROLOGY

Professor and Head
Stephen C. Jacobs, MD

UNDERGRADUATE MEDICAL PROGRAM

The curriculum is designed to introduce urologic principles as they relate to preservation of health through maximum renal function, normal urine storage and transport, an acceptable voiding pattern, treatment and prevention of urinary infection, identification and management of neoplasms of the urinary tract and male reproductive system and management of urolithiasis. Instruction is also given on disorders of the male reproductive tract including infertility and disturbance in sexual function.

During the surgical subspecialties clerkship, students can elect a specialty rotation on the urologic service at either the University Hospital or the Harbor Hospital Center. Each student is assigned patients to evaluate, follow and present to members of the faculty. Daily rounds and conferences are held. The students observe and participate in diagnostic and operative procedures and attend the outpatient clinic.

Senior students may participate in a one-month elective in urology at the University of Maryland Medical System.

GRADUATE STUDIES

The residency program consists of five years of urologic training following two prerequisite years of general surgery. In addition to four years of clinical training, one year is devoted to basic investigation in the laboratories of the division.

VASCULAR SURGERY

Professor and Head
William R. Flinn, MD

UNDERGRADUATE MEDICAL PROGRAM

Third Year

Vascular surgery is one of the core components of general surgery, and third-year medical students rotate on the Vascular Surgery Service for periods of two-to-four weeks. Students are specifically instructed on the performance of a thorough vascular examination, including the detection of carotid artery disease, aneurysm disease, and extremity arterial occlusive disease. They are instructed in the application of non-invasive vascular testing, including the bedside Doppler examination, as well as more sophisticated duplex ultrasound scan diagnosis. During their operating room experience, students assist in performing of major vascular reconstructive surgical procedures.

Fourth Year

Fourth-year medical students may elect a one-month rotation on the Vascular Surgery Service. During this time they are given responsibility for initial patient evaluation and assist in the planning of diagnostic evaluation and therapeutic management. Students are given advanced instruction in the performance and interpretation of noninvasive vascular testing, as well as evaluation of diagnostic arteriograms. Senior students have increasing responsibility in the operating room to help develop their technical skills. Students are also encouraged to participate in ongoing clinical research.

GRADUATE STUDIES

The Division of Vascular Surgery offers a fully accredited two-year residency position in General Vascular Surgery. The first year of this program includes experience in the Vascular Research Laboratory participating in ongoing primary research. The first year of the program also includes dedicated experience in the Non-invasive Vascular Laboratory, where the trainee will acquire skills in the performance and interpretation of all forms of non-invasive diagnostic testing. This preliminary year also includes experience in performing endovascular therapies. The second year of training is the clinical year, which is shared between the University Hospital and the Baltimore Veterans Administration Medical Center. The trainee serves as the supervisory resident on the Vascular Surgery Service, and is involved in the diagnostic evaluation, therapeutic decision making, and performance of vascular surgical procedures.

Programs

PROGRAM IN COMPARATIVE MEDICINE

Director
Louis J. DeTolla Jr., VMD, PhD

The Program in Comparative Medicine, established in 1989, studies the characterization of animal models of human disease for biomedical research and the use of such models to advance understanding of disease or biological processes. Comparative Medicine contributes to the School of Medicine by providing accredited services for laboratory animal care through Veterinary Resources, collaborative research, professional development of veterinary physicians and staff, formal training of veterinarians in residence, and a resource for information and instruction on the use of laboratory animals in research.

A three-year, full-time specialty training program in laboratory animal medicine is offered to prepare residents for board certification in the American College of Laboratory Animal Medicine (ACLAM). Applicants must have the DVM degree or equivalent from an accredited school of veterinary medicine, three years of full-time clinical practice experience, demonstrated interest/experience in laboratory animal species and research aptitude/experience. The program trains veterinarians in clinical laboratory animal medicine, surgery, pathology, laboratory diagnostics, husbandry, administration, legal aspects of animal care and use and biomedical research and includes assignment to clinical and laboratory rotations, coursework, seminars and contributions to scientific meetings. Research endeavors include vaccine development, transgenic animal production, infectious diseases, gene therapy, diagnostics and medical primatology.

The program also provides veterinary medical services to the Dental School, the School of Pharmacy, the University of Maryland Baltimore County and the Baltimore Veterans Affairs Medical Center. In addition, there are active working relationships with the Baltimore Zoo, the Comparative Medicine Division of Johns Hopkins University School of Medicine, Towson State University and the Gerontology Research Center of the National Institute on Aging. The director serves as chair of the Animal Policy Committee of the National Aquarium in Baltimore and directs an externship program for senior veterinary students of the Virginia/Maryland Regional School of Veterinary Medicine. The director also serves as director of University of Maryland Veterinary Resources and is responsible for the maintenance of campus accreditation by the American Association for the Accreditation of Laboratory Animal Care (AAALAC). Faculty have primary academic appointments in various clinical and basic science departments and secondary appointments in Comparative Medicine.

PROGRAM IN COMPLEMENTARY MEDICINE

Director
Brian M. Berman, MD

The mission of the Complementary Medicine Program is to evaluate the scientific foundation and efficacy of complementary or alternative medicine and explore its integration into mainstream medicine through an evidence-based framework. Designated as a program within the School of Medicine in 1997, the unit was started in 1991 and was formerly a division within the Department of Family Medicine. The program has been continuously involved in four overlapping spheres of activity: research, education, database and literature evaluation and clinical care. Over the past three years the program has also been home to a National Institutes of Health center grant for research in complementary medicine and pain.

The research activities of the program include: a)basic science investigations of the mechanism of action of complementary therapies, b) investigation of the efficacy, safety and cost effectiveness of complementary therapies, with special interest in dysfunction or illness from chronic pain and stress, using randomized control trials, clinical trials and outcome study designs, c) surveys of the attitudes and clinical behaviors of various physician groups toward complementary therapies, which has significant implications for consumer options. In an effort to collect and evaluate the existing literature in complementary medicine and pain, the program has developed a database of all relevant citations in this area (CAMPAIN), and team members are involved with systematic reviews and meta-analyses. In addition, the program serves as the coordinating center for the complementary medicine field of the Cochrane Collaboration, an international effort to systematically review and update medical therapies. The faculty of the program is strongly committed to collaboration on scientific research within our own institution and with institutions nationally and abroad.

The program also provides an integrative medical clinic where patients are offered a broad range of treatment options that include conventional and complementary treatments. Complementary therapies included at the clinic range from traditional Chinese medicine and acupuncture, to homeopathy and mind/body therapies. The diagnoses seen in the clinic are primarily pain-related and include arthritis, fibromyalgia, headaches, chronic back and neck pain, with a smaller number complaining of cancer-related pain and neurologic pain. Clinical service contacts are tacked longitudinally to provide regular feedback to practitioners of treatment plan outcomes and to provide preliminary data for more formalized research protocols such as clinical trials.

The purpose of our education program is to increase the medical profession's knowledge of complementary medicine and review the safety and efficacy of various complementary therapies. Educational initiatives include a fourth-year medical school survey course, Introduction to Complementary Medicine, offered as an elective. In addition, complementary medicine lectures are offered as part of the required third-year family medicine core residents' training, bringing in experts in complementary medicine from across the country. A visiting professor series was

introduced last year and aims to build links with clinicians and researchers in other countries.

PROGRAM IN HUMAN GENETICS

Director
Deborah A. Meyers, PhD

The newly established Program in Human Genetics accentuates graduate, medical and post-graduate education in genetics with emphasis on molecular and computational genetics. Both master's and doctoral programs are available. In addition, there is a board certified Master's program in genetic counseling. Positions are available for post-doctoral fellows in genetics or for MD fellows from specialized fields in medicine or pediatrics who wish to learn genetics as applicable to their fields of interest. State-of-the-art technology for sequencing, polymorphism detection and gene expression projects are available to members of the program in addition to computer facilities for bioinformatics and genetic analysis. There are numerous researchers from multiple departments working in genetics and the aim of the program is to provide a format for interaction and collaboration.

PROGRAM IN HUMAN HEALTH AND THE ENVIRONMENT (PHHE)

Director
Ellen K. Silbergeld, PhD
Professor of Epidemiology and Preventive Medicine

Understanding and preventing the impacts of environmental change on human health is one of the major challenges facing modern society. Global warming, chemical pollution, resource development and increased population pressures interact to alter the health of individuals and populations. The PHHE, a new program within the School of Medicine, provides opportunities for research and training in environmental health at the population and molecular levels. PHHE has four major programmatic goals: providing research and training opportunities in environmental health and related fields through its affiliated departments; serving as a resource of expertise and state-of-the-art technology for collaborative projects; offering formal training in molecular epidemiology, and advising state, national, and international organizations on critical issues in environmental health.

Because environmental health is inherently multidisciplinary, PHHE draws together collaborative teams of clinicians, epidemiologists and basic scientists to undertake laboratory research and community-based field studies. The program involves over 15 faculty members in seven departments within the School of Medicine (Anatomy, Pharmacology, Pathology, Epidemiology, Physiology, Medicine, Microbiology and Immunology), and has established formal collaborations and

training programs with research institutions in Brazil, the Philippines, Mexico and Egypt. PHHE personnel also serve as advisors to the state of Maryland, the CDC, the U.S. Environmental Protection Agency, the World Health Organization, the UN Environment Program, the World Bank and the Pan-American Health Organization.

Research within PHHE focuses on three major areas: the role of genetic factors in human susceptibility to disease and its outcome; the effects of environmental exposures on development and on women's health over the lifespan and the effects of environmental change on pathogens and human response to infectious disease. The program provides broad training in environmental epidemiology, mechanistic toxicology and molecular methods (genetics, biological markers, exposure assessment).

FACILITIES

The PHHE houses state-of-the-art laboratory facilities to support genetic analysis, models of human disease, image analysis and cell biology. An extensive library of DNA and other cell markers is being created to define gene:environment interactions. Collaborations with University facilities for transgenic animal research are vigorously pursued. PHHE also has tissue culture resources where rodent embryos are studied at the earliest stages of development, germ cells are cultured to study the effects of reproductive function and lymphocytes are examined for response to infectious disease and other stressors. PHHE's approved hazard laboratory safely prepares highly toxic chemicals for testing and research. Molecular biomarkers are identified in PHHE's molecular biology laboratories where researchers utilize knowledge of human genetics and molecular mechanisms of disease processes to understand and predict responses to environmental agents.

ACADEMIC PROGRAMS

PHHE does not grant separate degrees. Through affiliations with academic programs in the Graduate School, masters and doctoral students (PhD and MD/PhD) students can pursue research under the mentorship of PHHE faculty. PHHE also works closely with researchers in molecular ecology and aquatic systems at the Columbus Center of the University of Maryland, toxicologists and analytic chemists at the Joint Institute for Food Safety and Nutrition of the U.S. Food and Drug Administration and ecotoxicologists at the U.S. Army Center for Environmental Health Research. These institutions provide additional opportunities for research and training. PHHE students have been supported by training grants in toxicology and through studentships in epidemiology and preventive medicine. Support for international training is available for students from Mexico, the Philippines and Egypt. For admissions requirements, consult listings for the programs below.

PRIMARY AFFILIATED DEGREE PROGRAMS

Department of Epidemiology & Preventive Medicine
MS, PhD and Residency Programs
410 706-8492

Toxicology Training Program
Department of Pharmacology & Experimental Therapeutics
MS, PhD and postdoctoral programs
410 455-3564

Other Affiliated Programs at the University of Maryland, Baltimore

Women's Health Research Group
410 706-5003

International Health Program
410 706-7550

University of Maryland Biotechnology Institute
410 706-8181

The Program of Human Health and the Environment
University of Maryland School of Medicine
10 South Pine Street—MSTF 9-34
Baltimore, Maryland 21201
410 706-8709—Fax: 410 706-0727
email: esilber@epin.umaryland.edu

PROGRAM IN NEUROSCIENCE

Director
Michael T. Shipley, PhD

Associate Director
Bradley E. Alger, PhD

The Program in Neuroscience chartered by the state of Maryland to offer the PhD in Neuroscience, offers broad-based, multidisciplinary training through study tracks in four areas of neuroscience: behavioral/systems, cellular/molecular, developmental and cognitive/computational.

Research in cellular, molecular and integrative neuroscience emphasizes a variety of in vitro and in vivo techniques, and addresses issues at levels ranging from ion channels and single cells to complex subsystems of the mammalian brain and regulation of behavior. Research in cognitive and computational neuroscience is

focused on the relationship between human cognition, brain function and theoretical models.

Basic and clinical faculty investigate and treat neurological disorders such as epilepsy, stroke, trauma, Alzheimer's Disease, pain, neuro-degenerative diseases, sensory disorders, muscular sclerosis, ALS, developmental brain disorders, neuro-oncology, neuro-immunology, schizophrenia and other mental illnesses.

There are over 80 faculty members in the Program in Neuroscience. These faculty members are widely recognized as experts in neuroscience research and the treatment of neurological disorders. They function in state-of-the-art research and clinical facilities. In addition, they compete successfully for high levels of national grant funding. Faculty members have numerous collaborative teaching and supervisory interactions, which provides cohesiveness to the program and abundant opportunities for students, residents and fellows to obtain experience in interdisciplinary neuroscience studies.

With over 35,000 square feet of space in laboratories of the participating faculty and more than 4,000 square feet of common equipment rooms, the Program in Neuroscience facilities include all the basic equipment needed for electrophysiological, optical, ultrastructural, immunological and molecular neurobiological studies.

The program consists of faculty from basic and clinical departments in the School of Medicine, Dental School, School of Pharmacy and the Maryland Psychiatric Research Center. In addition, the program is affiliated with the statewide Program in Neuroscience and Cognitive Sciences at the University of Maryland's Baltimore County and College Park campuses. Michael T. Shipley, PhD is director of the program; is also Chair of the Department of Anatomy and Neurobiology at the University of Maryland School of Medicine.

The objective of the Program in Neuroscience is to train outstanding, independent neuroscientists who, in addition to having research/clinical skills, are well versed in the fundamental intellectual background of several major areas of neuroscience. The Program in Neuroscience provides coherence and accessibility to interdisciplinary interactions beyond traditional departmental and school-based units.

PROGRAM IN ONCOLOGY

Director
Sanford A. Stass, MD

The University of Maryland Cancer Center was established in 1982. Its history dates back to 1965 when the National Cancer Institute's Division of Cancer Treatment created the Baltimore Cancer Research Center at the Baltimore U.S. Public Health Service Hospital.

In 1974 the center moved to the University of Maryland, Baltimore and remained an intramural NCI program under contractual arrangement between the NCI and the University until 1982 when it became the University of Maryland

Cancer Center. In 1996, the center was renamed the Marlene and Stewart Greenebaum Cancer Center in recognition of a generous gift made to the University of Maryland Medical Center. The clinical effort of the center was established as a separate clinical entity within the University of Maryland Medical System. Within the School of Medicine and the other professional schools, the Cancer Center serves as the umbrella for all cancer-related activities on campus. The Cancer Center faculty have academic appointments in various clinical and basic science departments of the School of Medicine and other schools such as pharmacy, social work and the Dental School.

Activities of the Cancer Center include basic and clinical cancer research, student and house officer teaching and a strong focus on aggressive treatment with intense patient care in the 44-bed inpatient and outpatient services of the Cancer Center. In addition to full-time attending services on medical oncology and hematology, Cancer Center faculty members participate in multidisciplinary clinical programs centered around specific cancers (e.g. breast, thoracic, genitourinary, gynecologic, head and neck, gastroenterologic and hematologic malignancies) with specialists from medical, surgical and radiation oncology to provide integrated care for the cancer patient. In addition, the Cancer Center has a vigorous Bone Marrow/Stem Cell Transplantation Program which provides cutting-edge therapies in hematologic malignancies such as multiple myeloma as well as certain solid tumors, including breast and ovarian cancer.

The Greenebaum Cancer Center is a strong participant in new drug development and performs research on new anticancer drugs. Virtually every important drug in use in oncology today has been tested in this program, and the center has contracts in both the public and private sectors with a commitment to clinical and laboratory research. Pilot studies and Phases I, II and III Trials are performed, which range from testing efficacy and potential applicability of a given treatment program and establishing dose and toxicity limitations of new drugs, to comparing treatment programs for superiority of treatment, toxicity and outcome. These studies tend to be definitive treatment programs that have major impact on the practice of oncology nationwide. The Cancer Center has also established a strong translational research program in immunotherapy and biological therapy of cancer and is developing a gene therapy program focused primarily on hematologic malignancies. Strong research programs in breast and genitourinary cancers and molecular oncology provide foundations for the translational research programs. The faculty has a strong commitment to interinstitutional cooperative scientific trials and cancer research.

Students and residents participate in weekly grand rounds and conferences, and students are encouraged to become involved in research projects with Cancer Center faculty members. The Cancer Center sponsors an ongoing cancer research seminar series that attracts nationally known speakers.

PROGRAM IN TRAUMA

Director
Thomas M. Scalea, MD

The Program in Trauma is organized as a multidisciplinary clinical, educational and research component within the School of Medicine. The program's core service includes general surgery, critical care, orthopaedics, plastic surgery, anesthesia, infectious disease and hyperbaric medicine. The R Adams Cowley Shock Trauma Center is defined in Maryland law as the "core component of the state's emergency medical system and shall continue to serve as the state's primary adult trauma clinical resource center" for Maryland's comprehensive system of emergency services. The center is designated by Maryland Institute for Emergency Medical Services Systems (MIEMSS) as the Primary Adult Resource Center (PARC) and serves as the statewide referral site for patients with multisystem injury, acute complex orthopaedic injury, spinal cord and column injuries, brain injury, hyperbaric medicine therapy and patients who are at risk for multiple organ dysfunction.

Shock Trauma serves as Maryland's principle teaching site for training physicians and allied professionals in the care of traumatic injury. The trauma/critical care training program involving the trauma teams and all other specialty services includes students and residents from a variety of prestigious schools and programs across the country. Students and residents participate in patient care, core curriculum lectures, case conferences and weekly grand rounds. Students and residents are also given the opportunity to participate in clinical research trials.

UNDERGRADUATE MEDICAL PROGRAM

Third Year

GSUR 530 A one-month trauma team rotation is required as part of the basic surgical clerkship. Students participate under supervision in the clinical resuscitation, diagnosis, and management of trauma and emergency medicine.

Fourth Year

GSUR 546 01 Senior students may elect a one-month elective on the trauma surgery team.

GRADUATE PROGRAMS

In conjunction with the Department of Surgery, an approved surgical critical care fellowship is offered with three months on the trauma surgical team and rotations through all the UMMS intensive care units. Successful completion leads to eligibility for a certificate of added qualification in surgical critical care. An approved orthopaedic trauma fellowship is also offered at the Shock Trauma Center. Finally, a one-year fellowship in trauma anesthesia is offered. Over the past two decades, graduates of these fellowships have become leaders in trauma across the country and abroad.

Organized Research Centers

CENTER FOR THE GENETICS OF ASTHMA AND COMPLEX DISEASES

Director
Eugene R. Bleecker, MD

Associate Director
Deborah A. Meyers, PhD

The Organized Research Center for the Genetics of Asthma and Complex Diseases (the "GACD" or "Center") was established in January 1997, at the University of Maryland School of Medicine. Its purpose is to investigate genetic mechanisms responsible for the development and progression of common complex diseases in man. The GACD is comprised of faculty from several departments representing various disciplines within the University of Maryland campus. Disorders currently under investigation include respiratory diseases (asthma and COPD), cardiovascular and cerebrovascular disease, cancer (prostate), osteoporosis and neuropsychiatric disorders. The GACD maintains and seeks to create collaborative efforts with other bio-medical institutions, universities, governments, and industries in the United States and abroad.

The main objective of the GACD is to identify genes responsible for susceptibility and progression of common diseases. Additional goals include delineating the role of genetics in a specific disease by determining the mode of inheritance; mapping susceptibility genes by performing complete genome searches or candidate gene approaches; locating candidate or other genes in regions of interest by employing fine mapping and physical mapping techniques (positional cloning); sequencing genes in chromosomal regions of interest to detect polymorphisms or mutations; evaluating the importance of these candidate genes in pathogenesis disease (genotype B phenotype relationships); and determining expression of gene products in human and animal models including transgenic animal preparations. Results of these approaches will be used to develop new therapies based on gene discovery, to better understand the pathogenesis of diseases or conditions under investigation, and to develop new methods for disease identification and early diagnosis.

The center conducts its research in three distinct laboratories that include a clinical laboratory to ascertain subjects for basic genetic studies and to investigate and test therapies based on the results of genetic research. The genetic analytical laboratory's main focus is to evaluate genetic epidemiology of complex diseases. Linkage and association approaches are used to identify susceptibility genes for several complex diseases, and other statistical and quantitative techniques are developed and applied to genetics investigation. The genetic molecular laboratory performs molecular biological procedures including genome scanning and DNA sequencing.

The GACD is available for collaborative investigation and research training of pre- and post-doctoral candidates. Elective course opportunities are available in each of the three laboratory settings. Members of the GACD participate in formal teaching activities coordinated by the Program in Human Genetics.

CENTER IN GERONTOLOGY

Director
Andrew P. Goldberg, MD

Andrew P. Goldberg, MD, Professor and Director, Division of Gerontology, Department of Medicine, and Jay S. Magaziner, PhD, MSHyg, Professor and Director, Division of Gerontology, Department of Epidemiology and Preventive Medicine, University of Maryland School of Medicine

The ORC in Gerontology was established in 1998 under the leadership of Andrew P. Goldberg, MD, and Jay S. Magaziner, PhD, MSHyg. The center coordinates research and research training in those areas of gerontology that transcend traditional disciplinary lines and are amenable to an interdisciplinary approach to critical issues in aging research. It interfaces with the University's existing efforts in gerontology and geriatric medicine to develop research, educational and clinical programs that nurture and expand research and research funding in aging. The goal of the ORC in Gerontology is to enhance involvement and collaboration among faculty at the University's six health professional schools, and expand the conduct of interdisciplinary research and research training in gerontology through collaborations among investigators in aging research at University of Maryland, College Park and University of Maryland, Baltimore County.

The mission of the ORC in Gerontology is to create, facilitate and expand interdisciplinary collaborations among investigators to further the development of academic excellence in key areas of clinical, epidemiological, basic-biomedical, mental health, legal-ethical, health services and population-based research in aging. In doing so, it will amplify and enrich these areas of aging research, provide outstanding research training and educational opportunities to students, trainees and health professionals, and enhance the delivery of multi-disciplinary geriatric care to older persons. This will be accomplished by collaborating with key leaders in gerontology at the University and elsewhere in the University System of Maryland to expand resources for the conduct of aging research, target populations, which can provide the basis for research and research training in aging, and develop core facilities to conduct new, cutting-edge, interdisciplinary aging research.

The center emphasizes several specific research areas in aging at the University where there are existing funded initiatives. This approach optimizes the use of resources and builds on the existing strengths in aging research at UMB. These areas involve several nationally recognized research programs in aging: 1) the National Institute on Aging (NIA) Claude D. Pepper Older Americans Independence Center, which conducts exercise rehabilitation research in functionally limited older patients; 2) the Baltimore Hip Studies, which conducts research in hip

fracture recovery; 3) the Geriatric Research, Education and Clinical Center (GRECC) within the Department of Veterans Affairs Medical Center, which conducts research in the secondary prevention of coronary artery disease through exercise, nutrition and smoking cessation in high risk older veterans and the tertiary rehabilitation of older veterans who have suffered a stroke; 4) the Maryland Long-Term Care Project, which conducts epidemiologic research in residential, long-term care and assisted-living sites; 5) the VA Cooperative Geriatric Evaluation and Management Research Study, which conducts rehabilitation research in frail older hospitalized VA patients to prevent the need for institutionalization in nursing homes; 6) the National Study of Osteoporotic Fractures, which examines risk factors for hip fracture in older women and 7) NIA-funded research training programs in exercise physiology and metabolism research and the epidemiology of aging.

Within these foci, the ORC: 1) promotes interdisciplinary research in aging among faculty with similar interests; 2) establishes core facilities and populations for the conduct of interdisciplinary research and research training in aging; 3) identifies potential funding sources for aging research and 4) provides support for pilot studies in aging research by trainees and junior faculty. These activities will lead to the development of new interdisciplinary aging research and enhance the competitiveness of investigators at UMB for peer-reviewed funding in aging.

Membership in the ORC consists of faculty at three University campuses, Johns Hopkins University, the NIA-Gerontology Research Center and other members of academic institutions who have major professional interests in aging research and are involved in collaborative research in gerontology and geriatrics at the University. The ORC will provide these faculty and students with 1) opportunities for collaborations and interactions to develop research in aging, 2) access to populations and core facilities for the conduct of aging research, 3) support of pilot studies necessary to promote the development of new grant proposals and 4) access to research fellows, research assistants and administrative staff to assist them in the conduct of their aging research. Faculty members of the ORC meet regularly to develop research grants in the central areas of the ORC mission.

CENTER FOR HEALTH POLICY AND HEALTH SERVICES RESEARCH

Director
Claudia R. Baquet, MD, MPH
Associate Dean, Office of Policy and Planning,
Associate Professor, Department of Epidemiology and Preventive Medicine.

The Center provides epidemiologic/biostatistical support, quality improvement study design and evaluation, disease management program support, NCQA survey preparation, health outcomes studies, low literacy patient education and outreach, Medicare patient compliance studies, patient and provider surveys, rural health research. The Center for Health Policy and Health Services Research has completed health services research projects for the Maryland Department of Health and Men-

tal Hygiene and other agencies, conducted quality improvement studies for the managed care industry, established community outreach research and education networks in urban and rural Maryland, influenced national and state health care policy and established telemedicine research and clinical programs in underserved areas. The center has recently established the Computer Assisted Telephone Interviewing (CATI) facility, a technology that has applications in survey research, outcomes measurement and patient compliance, enrollment and recruitment in managed care and in clinical trials. Based in the School of Medicine, the Center is a campus-wide, multidisciplinary organized research center which involves faculty from departments throughout the University's six professional schools.

MISSION STATEMENT

To assess the changing health needs of Maryland citizens and the nation, to conduct analyses and develop policy related to state, city and national health care services, financial and economic cost, clinical outcomes, efficacy, equity and the impact of reimbursement on patient and provider behaviors. To stimulate, support and conduct interdisciplinary health policy and health services research.

CENTER FOR HEALTH PROMOTION AND DISEASE PREVENTION

Co-Director
Stephen Havas, MD, MPH, MS
Associate Professor, Department of Epidemiology and Preventive Medicine and Department of Medicine

The mission of the Center for Health Promotion and Disease Prevention is to serve as the University's central focus for community-based health promotion and disease prevention research activities. The primary focus for the ORC's research is the prevention of heart disease, cancer and stroke. Multidisciplinary faculty research teams from the schools of medicine, nursing, dentistry, pharmacy and social work, the University of Maryland, College Park and the University of Maryland, Baltimore County participate in a variety of research projects aimed at reducing risk factors for heart disease, cancer and stroke. Risk factors being addressed include unhealthy nutrition, high blood cholesterol, obesity, physical inactivity, smoking and high blood pressure. Funding for this research has been obtained from the National Cancer Institute, the National Heart, Lung and Blood Institute, the Maryland Department of Health and Mental Hygiene and other agencies.

Other ORC faculty conduct health promotion research in areas ranging from maternal and child health to substance abuse to oral health. This ORC seeks to integrate and expand the large base of University research activities in these areas currently being conducted by core ORC faculty. This research also spans the five health care professional schools.

Research activities are carried out in a variety of community-based settings such as schools, worksites, churches, WIC sites, senior centers, hospitals and other health care facilities. Medical and other health care professional student involvement in research project activities is encouraged. This ORC is co-sponsored by the schools of medicine and nursing.

CENTER FOR VACCINE DEVELOPMENT

Director
Myron M. Levine, MD, DTPH

The Center for Vaccine Development (CVD), an Organized Research Center, is dedicated to research, training, clinical consultation and public health consultation in the broad field of vaccinology. CVD faculty hold primary appointments in the departments of medicine, pediatrics, or microbiology and immunology. The CVD has four primary missions.

The first is to foster and carry out superior, state-of-the-art, peer reviewed, innovative, multi-disciplinary research on all aspects of vaccinology including:

- Basic research (e.g., pathogenesis, engineering of vaccine candidates, fundamental studies of immune response, studies of host-pathogen interaction);

- Clinical research (e.g., Phase 1 and 2 clinical trials assessing the safety, immunogenicity, transmissibility, etc., of vaccine candidates in pediatric, young adult, geriatric and special risk populations; intensive measurement of serum, mucosal and cell-mediated immune responses),

- Epidemiologic research and field studies (e.g., large-scale, randomized, controlled field trials to assess vaccine efficacy and effectiveness; serosurveys; prevalence surveys of pathogen carriage; cohort studies quantifying the occurrence and relative importance of known and newly discovered pathogens).

This dominant mission of the CVD requires a multidisciplinary approach to the development and testing of new and improved vaccines. In total, 26 full-time faculty and three adjunct faculty (18 MDs, 7 PhDs, 4 MD/PhDs) and approximately 60 staff members work in the Baltimore complex. Approximately 90 percent of their salary support comes from competitive grants and research contracts, especially from the NIH, which, in fiscal year 1998, awarded CVD investigators over $5.7 million in grants and contracts.

Field research is carried out at several sites around the world, most recently including Indonesia, Mali and Malawi. Of particular importance is CVD-Chile, a research group that has undertaken epidemiologic and clinical research in Santiago, Chile, over the past 20 years.

The second mission of the CVD is to train medical and graduate students, postdoctoral fellows and visiting scientists within the broad discipline of vaccinology.

Several CVD faculty hold secondary appointments in departments with graduate programs such as microbiology and immunology, and epidemiology and preventive medicine, allowing them to serve as graduate student mentors. Medical students often perform short-term research internships in CVD laboratories or field sites. The CVD currently holds two NIH-supported training grants.

The CVD's third mission is to provide consultations in the area of clinical vaccinology, advice on immunizations for infants and children, travelers, pregnant women, and immunocompromised hosts, especially through our Traveler's Health Service, an outpatient clinic.

Finally, the CVD provides expert consultantships or committee membership to national and international agencies (e.g., National Institutes of Health, Food and Drug Administration, World Health Organization), foreign Ministries of Health and industry.

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Peravali, Ravindra, Graduate Research Assistant
Pomerantz, Stephen M., MD, Assistant Professor
Pugatch, Robert D., MD, Medical School Professor
Reiner, Bruce I., MD, Clinical Assistant Professor
Reiter, Sean B., MD, Instructor
Resnik, Charles S., MD, Associate Professor
Rosado de Christenson, Melissa L., MD, Clinical Assistant Professor
Rothman, Michael I., MD, Assistant Professor
Roys, Steven R., MS, Research Associate
Rucker, Patrick, MD, Instructor
Shanmuganathan, Kathirkamanathan, MD, Assistant Professor
Siegel, Eliot L., MD, Medical School Associate Professor
Sloan, Michael A., MD, Clinical Assistant Professor
Small, Steven L., MD, Clinical Associate Professor
Sonin, Andrew H., MD, Medical School Assistant Professor
Stallmeyer, M.J. Bernadette, MD, Medical School Assistant Professor
Taylor, Rachel E., MD, Instructor
Teferra, Ethopia H., MD, Instructor

Templeton, Philip A., MD, Medical School Professor and Chair
Twardzik, Frank G., MD, Medical School Assistant Professor
Venkatadri, Aanandhi, Graduate Research Assistant
Wagner, Brent J., MD, Clinical Assistant Professor
Weksberg, Allan P., MD, Medical School Assistant Professor
White, Charles S., MD, Medical School Associate Professor
Wong-You-Cheong, Jade J., MD, Assistant Professor
Wu, John W., MD, Instructor
Zagardo, Michael T., MD, Assistant Professor
Zoarski, Gregg H., MD, Assistant Professor

DEPARTMENT OF EPIDEMIOLOGY AND PREVENTIVE MEDICINE

Professor and Chair
Paul D. Stolley, M.D., M.P.H.

Charlotte Ferencz, MD, MPH, Professor Emeritus

Primary Faculty
Anlikrt, Jean, PhD, Research Assistant Professor*
Baquet, Claudia R., MD, MPH, Medical School Associate Professor, Associate Dean for Policy and Planning
Bush, Trudy L., PhD, MHS, Professor
Chen, T. Timothy, PhD, Medical School Professor (Greenebaum Cancer Center)
Dischinger, Patricia C., PhD, Research Associate Professor (National Study Center)
Ferencz, Charlotte, MD, MPH, Professor Emeritus
Fix, Alan, MD, Assistant Professor
Flaws, Jodi, PhD, Assistant Professor
Fredman, Lisa, PhD, Assistant Professor
Gruber-Baldini, Ann L., PhD, Research Assistant Professor
Havas, Stephen, MD, MPH, MS, Associate Professor
Hawkes, William G., PhD, Research Assistant Professor
Hebel, J. Richard, PhD, Professor
Kessler, Irving I., MD, DrPH, MPH, Professor
Kjerulff, Kristen H., PhD, Associate Professor
Langenberg, Patricia, PhD, Professor
Lasky, Tamar, PhD, Research Assistant Professor, (Center for Health Policy & Research)
Loffredo, Christopher, PhD, Research Assistant Professor, PHHE
Magaziner, Jay, PhD, MSHyg, Professor
Magder, Laurence S., PhD, MPH, Assistant Professor
McCarter, Robert J., ScD, School Associate Professor

*Part time

Rosario, Joana A., MD, MPH, Assistant Professor
Rubin, Judith D., MD, MPH, School Professor
Scott, Jane, ScD, MSN, Research Assistant Professor, (National Study Center)
Sexton, Mary, PhD, MPH, Professor
Sherwin, Roger, MB,BChir, Professor
Silbergeld, Ellen K., PhD, Professor
Stolley, Paul D., MD, MPH, Professor & Chair
Strickland, George T., MD, PhD, Professor
Wilson, P. David, PhD, Professor

Secondary Faculty
Al-Ibrahim, Mohamed S., MD, ChB, Professor
Bartman, Barbara, MD, Assistant Professor
Blattner, William, MD, Professor
Bleecker, Eugene, MD, Professor
Boughman, Joann A., PhD, Professor
Cleghorn, Farley, MD, MPH, Assistant Professor
Daly, Mel P., MD, Medical School Associate Professor
Fedder, Donald O., DPH, Professor
Ferentz, Kevin S., MD, Associate Professor
Fink, Jeffrey, MD, Assistant Professor
Flynn, James P.G., MD, Clinical Professor
Gordon, Janice L., MS, Research Associate
Hochberg, Marc C., MD, MPH, Professor
Keogh, James P., MD, Associate Professor
Kittner, Steven J., MD, MPH, Associate Professor
Levine, Myrone M., MD, Professor
McDiarmid, Melissa, MD , Associate Professor
Meyers, Carole, MD, Assistant Professor
Meyers, Deborah, PhD, Professor
Morris, J. Glenn, Jr., MD, Professor
Nicholson, Wanda, MD, Assistant Professor
Palley, Howard A., PhD, Professor
Prenger, Valerie L., PhD, Research Assist Professor
Price, Thomas R., MD, Professor
Richardson, James Paul, MD, Associate Professor
Romberg, Elaine, PhD, Professor
Rothenberg, Karen H., JD, Professor
Scott, Jean, RN, DPH, Assistant Professor
Warren, John W., MD, Professor
Woodward, Theodore E., MD, Clinical Professor

Adjunct Faculty
Alt, Patricia, PhD, Assistant Professor
Anderson, J. Michael, MD, Clinical Assistant Professor
Bernstein, Michael T., MD, Assistant Professor

Bosco, Lynn MD, Associate Professor
Brown, Willa, MD, MPH, Assistant Professor
Colfer, Joan M., MD, MPH, Assistant Professor
Correa-Villasenor, Adolfo, MD, PhD, Assistant Professor
Dickersin, Kay, PhD, Associate Professor
Dwyer, Diane M., MD, Associate Professor
Eckert, J. Kevin, PhD, Professor
Eisenberg, Max, PhD, Associate Professor
Epstein, Robert, MD, MS, Assistant Professor
Farrell, Katherine P., MPH, Assistant Professor
Felsenthal, Gerald, MD, Clinical Professor
Fine, Eric M., MD, MPH, Clinical Assistant Professor
Fox, Kathleen M., PhD, MHS, Assistant Professor
Fox, Steven, MD, Associate Professor
Fujikawa, Janet, DO, Clinical Instructor
Hinman, Edward J., MD, MPH, FACP, Associate Professor
Hudson, James I., MD, Medical School Professor
Kanjarpane, Davesh, MD, Clinical Assistant Professor
Kazandjian, Vahe A., PhD, MPH, Associate Professor
Khaliq, Amir, MS. MSHS, PhD, Assistant Professor
Knatterud, Genell L., PhD, Research Professor
Kohler, Helen R., PhD, Assistant Professor
Krakauer, Henry, MD, PhD, Research Associate Professor
Lange, Robert, MD, MPH, Assistant Professor
Lurie, Iosif, MD, Professor
Matuszak, Diane, MD, MPH, Assistant Professor
McCallum, David B., PhD, Associate Professor
Nagey, A., MD, PhD, Associate Professor
Parascandola, Mark, PhD, Assistant Professor
Reinstein, Leon, MD, Clinical Professor
Rosenberger, William, PhD, Assistant Professor
Scherlis, Leonard, MD, Research Professor
Tayback, Matthew, ScD, Visiting Professor
Terrin, Michael L., MD, MPH, Research Assistant Professor
Van Blerk, Gillian Ann, MD, MPH, Assistant Professor
Weis, Kathleen A., PhD, Assistant Professor
Wilson, Laura B., PhD, MA, Professor
Woodward, William E., MD, Research Associate Professor
Yu-Yahiro, Janet, PhD, Research Associate
Zimmerly, James G., MD, MPH, LLB, Clinical Associate Professor
Zimmerman, Sheryl I., PhD, Assistant Professor

DEPARTMENT OF FAMILY MEDICINE

Professor and Chair
Herbert L. Muncie Jr., MD

Aszalos, Rita M., MD, Clinical Instructor
Barnet, Elizabeth, MD, School Associate Professor
Berman, Brian, MD, School Associate Professor
Daly, Mel P., MD, School Associate Professor
DeForge, Bruce, PhD, Assistant Professor
Esege, Alistair, MD, Clinical Instructor
Ferentz, Kevin S., MD, School Associate Professor
Hill, C. Earl, MD, Associate Professor
Keay, Timothy J., MD, School Associate Professor
Khanna, Niharika, MD, School Assistant Professor
Lao, Lixing, PhD, Research Assistant Professor
Patel, Alkesh, MD, School Assistant Professor
Rooks-Worrell, Yvette, MD, School Assistant Professor
Rose, Vivienne, MD, Clinical Instructor
Ruthman, Karen, MD, School Assistant Professor
Siegel, Neil, MD, School Assistant Professor
Stewart, David L., MD, MPH, School Associate Professor
Taler, George, MD, School Assosciate Professor
Taylor, Gregory H., MD, School Assistant Professor
Terrell, Thomas, MD, School Assistant Professor
Tucker, Andrew, MD, School Assistant Professor
Warrington, Verlyn, MD, Clinical Instructor
Williams, Dave, MD, School Assistant Professor

Part-Time Faculty
Blandin-Clark, Margaret, LCSW, Clinical Assistant Professor
Boyle, Therese, MD, Clinical Instructor
Delgado, Maria E., MD, Instructor
Duncan, Robert, MD, Clinical Assistant Professor
Kelleher, Mary, MD, Clinical Instructor
Michocki, Robert J., PharmD, School Associate Professor
Skotzko, Christine, MD, Clinical Instructor
Vazzano, Anthony, MD, Clinical Assistant Professor

Volunteers and Preceptors
Adamo, Charles P., MD, Clinical Instructor
Birchess, Damian, MD, Clinical Assistant Professor
Booth, Carol, MD, Clinical Instructor
Bosley, James, MD, Clinical Instructor
Carrier, Judith, M., MD, Clinical Instructor
Colgan, Richard, MD, Clinical Instructor

Compton, Nancy M., MD, Clinical Instructor
Coughlin, Robert M., MD, Clinical Instructor
Courtney, Leo A., MD, Clinical Instructor
Crowther, Christy L., RN, MS, CRNP, Clinical Instructor
Davis, Tammi, MD, Clinical Instructor
Digerolamo, Albert, MD, Clinical Assistant Professor
Domenick, Mark T., MD, Instructor
Forman, Jonathan, MD, Clinical Instructor
Gayle, Michael E., MD, Clinical Instructor
Goedeke, Rebecca A., MD, Clinical Instructor
Hakkarinen, William, MD, Clinical Assistant Professor
Hogan, Kevin, MD, Clinical Instructor
Holmes, A. Clark, MD, Clinical Instructor
Johnson, Thomas G., MD, Clinical Assistant Professor
Jones-Lukacs, Elizabeth, MD, Clinical Instructor
Kaminski, Mitchell A., MD, Clinical Assistant Professor
Klapper, Mitchell, MD, Clinical Instructor
Lamm, William D., MD, Clinical Instructor
Lazar, Lea, MD, Clinical Instructor
Lavy, Richard, MD, Clinical Professor
Lewis, Roger A., MD, Clinical Instructor
Lipsitz, Cynthia, MD, M.P.H., Clinical Instructor
Loreck, Ellen S., MS, Clinical Instructor
Marks, William A., MD, Clinical Instructor
Mathew, Meera M., MD, Clinical Instructor
Nallin, Eugene P. Jr., MD, Clinical Instructor
Naumann, Walter K., MD, Clinical Instructor
Niehoff, Michael J., MD, Clinical Assistant Professor
Peeke, Pamela, MD., MPH, Clinical Assistant Professor
Posner, Marc, MD, Clinical Instructor
Poulsen, Norman, MD, Clinical Assistant Professor
Preslan, Mark, MD, Clinical Assistant Professor
Richardson, James P., MD, MPH, Clinical Associate Professor
Richie, Emily, MD, Clinical Instructor
Riggle, Martha A., MD, Clinical Instructor
Rixey, Sallie, MD, MS, Clinical Assistant Professor
Saluja, Darshan, MD, Clinical Instructor
Scheerer, Michael, MD, Clinical Instructor
Schwalm, Karl E., MD, Instructor
Stegman, Charles, MD, Clinical Instructor
Steinberg, John, MD, Medical School Assistant Professor
Stoltzfus, George B., MD, Clinical Instructor
Wagoner, Gary L., MD, Clinical Instructor
Wicks, Kanthi, MD, Clinical Instructor
Wilson, Larry, MD, Clinical Assistant Professor
Wright, John, PhD, Clinical Assistant Professor

Zajano, David, MD, Clinical Assistant Professor
Zebley, Joseph W. III, MD, Clinical Assistant Professor

MEDICAL AND RESEARCH TECHNOLOGY

Professor and Chair
Denise M. Harmening, PhD

Adams, Karen, MA, MT(ASCP), Clinical Instructor
Alonsonzana, Edgar, MD, Assistant Professor
Azzazy, Hassan, PhD, Assistant Professor
Caldwell, Barbara S., BS, MT(ASCP), Clinical Instructor
Carnahan, Amy, MS(ASCP) School Assistant Professor
Cartwright, Willie, MS, MT(ASCP), School Assistant Professor
Christenson, Robert, PhD, Associate Professor
Ciesla, Betty, MS, MT(ASCP),School Assistant Professor
Cummings, Patrick J., ScD, MT(ASCP), Assistant Professor
Danishefsky, Avis, PhD, Assistant Professor
Flodstrom, Glenn C., MS, MT(ASCP), School Assistant Professor
Fonong, Tekum, PhD, Research Assistant Professor
Gilman, Allan, MS, MT(ASCP), Clinical Instructor
Goldberger, Bruce A., PhD, Adjunct Assistant Professor
Griffey, Paul, MBA, MT(ASCP), Assistant Professor & Manager of Faculty Practice Plan
Hadfield, Jillaine, MS, MT(ASCP), Clinical Instructor
Harmening, Denise M., PhD, MT(ASCP), CLS(NCA), Chair and Professor
Jacobs, Maryce, PhD., Adjunct Assistant Professor
Johnson, Lisa J., MHS, MT(ASCP), Clinical Instructor
Langerman, Solomon, PhD, Adjunct Assistant Professor
Mantaring, Myrna, MS, MCI, MT(ASCP), Clinical Instructor
Roberts, Chester R., PhD, Adjunct Assistant Professor
Schenerman, Mark, PhD, Adjunct Assistant Professor
Schwalbe, Richard, PhD, Assistant Professor
Sendelbach, Louis, PhD, Adjunct Assistant Professor
Sorace, James, PhD, Adjunct Assistant Professor
Taghizadeh, Mitra, MS, MT(ASCP), Clinical Assistant Professor
Torpey III, David, PhD, Assistant Professor
Vucenik, Ivana, PhD, Assistant Professor & Graduate Director
Wright, Patricia, BA, MT(ASCP), Adjunct Clinical Instructor

DEPARTMENT OF MEDICINE

Professor and Interim Chair
Frank M. Calia, MD

Philip A. Mackowiak, MD, Professor and Vice-Chair

Susan D. Wolfsthal, MD, Associate Professor and Director, Residency Training Program; Associate Chair/Education

Emeritus Faculty
Edward F. Cotter, MD, Clinical Associate Professor Emeritus
Sheldon E. Greisman, MD, Professor Emeritus
Yu Chen Lee, MD, Medical School Professor Emeritus
Samuel Morrison, Clinical Associate Professor Emeritus
Leonard Scherlis, Professor Emeritus
Robert T. Singleton, MD, Associate Professor Emeritus
Merrill J. Snyder, PhD, Research Professor Emeritus
Theodore E. Woodward, MD, MACP, Professor and Chair Emeritus

Albuquerque, Edson X., MD, PhD, Professor (Pharmacology)
Alevizatos, Aristides C., MD, Clinical Assistant Professor
Al-Ibrahim, Mohamed S., MB,ChB, Medical School Professor
Ammlung, Robert, MD, Clinical Instructor
Anthony, William C., MD, Clinical Assistant Professor
Applefeld, Mark M., MD, Associate Professor
Argento, Nicholas B., MD, Clinical Assistant Professor
Ayash, Raja E., MD, Clinical Assistant Professor
Barbour, Deborah J., MD, Clinical Associate Professor
Barish, Robert A., MD, Medical School Professor (Surgery)
Beidas, Sary O., MBBS, Clinical Assistant Professor
Bell, Stuart B., MD, Clinical Assistant Professor
Benesh, Samuel I., MD, Clinical Instructor
Blaustein, Mordecai P., MD, Professor (Physiology)
Blume, Michael H., MD, Clinical Assistant Professor
Bolgiano, Edward B., MD, Medical School Associate Professor (Surgery)
Booher, Catherine A, Clinical Instructor
Boston, Jose', MD, Clinical Assistant Professor
Boyer, George M., MD, Clinical Assistant Professor
Breza, George M., MD, Clinical Assistant Professor
Browne, Brian J. MD, Medical School Professor (Surgery)
Buescher, Philip C., MD, Clinical Assistant Professor
Bussey-Jones, Jada C., MD, Clinical Assistant Professor
Calia, Frank M., MD, Professor and Interim Chairman/Vice Dean
Chappell, Thomas E., MD, Clinical Assistant Professor
Chaudry, Madhu, MBBS, Clinical Instructor

Chodroff, Charles H., MD, Clinical Instructor
Cole, Enser W., III, MD, Clinical Instructor
Collins, Michael T., MD, Clinical Instructor
Costa, Joseph J., MD, Clinical Assistant Professor
Davidson, William B., MD, Clinical Assistant Professor
Dear, William, MD, Clinical Instructor
Diamond, Richard I., MD, Clinical Instructor
Dibos, Pablo E., MD, Clinical Assistant Professor
Edgar, Paul J., MD, Clinical Instructor
Edwards, Willarda V., MD, Clinical Instructor
Evelius, John T., MD, Clinical Instructor
Fay, Betsy A., MD, Clinical Instructor
Feldman, Naomi R., MD, Clinical Assistant Professor
Felipa, Victor R., MD, Clinical Associate Professor
Fiscus, Jane A., MD, Clinical Instructor
Fiscus, Wilber G., MD, Clinical Assistant Professor
Fleury, Mary L., MD, Clinical Instructor
Fleury, Paul R., MD, Clinical Instructor
Flowers, William, MD, Clinical Assistant Professor
Foley, H.T., MD, JD, Clinical Associate Professor
Freeland, Howard S., MD, Clinical Assistant Professor
Frielander, Neal M., MD, JD, Clinical Assistant Professor
Friedman, Howard R., MD, Clinical Instructor
Gaber, Jeffrey D., MD, Clinical Assistant Professor
Gallagher, Martin W. Jr., MD, Clinical Assistant Professor
Gallo, Robert C., MD, Professor (UMBI)
Geckler, Ronald W., MD, Clinical Associate Professor
Gitter, Jonathan, MD, Clinical Instructor
Gloth, F. Michael III, Clinical Assistant Professor
Gold, Barry S., MD, Clinical Assistant Professor
Goldscher, David A., MD, Clinical Instructor
Goodman, Jay S., MD, Clinical Professor
Grenzer, Louis E., MD, Clinical Associate Professor
Greene, Linda D., MD, Clinical Assistant Professor
Groleau, Georgina A., MD, Medical School Assistant Professor (Surgery)
Hadley, Tammy D., MD, Clinical Instructor
Hardesty, Daniel C., MD, Clinical Assistant Professor
Heinritz, Colen C., MD, Clinical Assistant Professor
Hijab, Wally S., MB,ChB, Clinical Assistant Professor
Hitzig, Pietr, MD, Clinical Instructor
Hobbins, Thomas E., MD, Clinical Associate Professor
Hoesch, Charles F., MD, Clinical Instructor
Hoffman, Ian B., MD, Clinical Assistant Professor
Hyle, Michael A., MD, Clinical Instructor
Jacobs, Stuart, L. MD, Clinical Assistant Professor
Jerrard, David, MD, Medical School Associate Professor (Surgery)

Johnson, Sandra E.C.O., MD, Clinical Assistant Professor
Kaiser, Margaret A., MD, Clinical Assistant Professor
Karacuchansky, Miguel, MD, Clinical Assistant Professor
Karpers, Bernard S., MD, Clinical Assistant Professor
Katz, Stephen J., MD, Clinical Assistant Professor
Kent, Robert R., MD, Clinical Instructor
Kerns, William B., MD, Clinical Instructor
Keys, Iris R., MD, Clinical Assistant Professor
Kimmel, Alan L., MD, Clinical Instructor
Le, Loc T., MD, Clinical Assistant Professor
Lecuona, Sonya J., MD, Clinical Assistant Professor
Levine, Jerry I., MD, Clinical Assistant Professor
Levine, Marshall A., MD, Clinical Assistant Professor
Liberto, Robert T., MD, Clinical Assistant Professor
Lowder, Gerald M., MD, Clinical Assistant Professor
Mackowiak, Philip A., MD, Professor
MacLean, Douglas, PhD, Adjunct Professor
Mallott, David B., MD, Assistant Professor (Psychiatry)
Mardelli, T. Joseph, MBBCH, Clinical Assistant Professor
Mazzocco, Victor E., MD, Clinical Associate Professor
McConville, John H., MD, Clinical Assistant Professor
Mead, Jr., Joseph A., MD, Clinical Professor
Medalie, G. Robert, MD, Clinical Instructor
Miller, Edward M., MD, Clinical Assistant Professor
Mishkin, David A., MD, Clinical Assistant Professor
Moran, George W., MD, Clinical Associate Professor
Mugmon, Marc A., MD, Clinical Assistant Professor
Mulholland, John H., MD, Clinical Associate Professor
Notarengelo, Joseph D., MD, Clinical Assistant Professor
Olshaker, Jonathan S., MD, Medical School Associate Professor (Surgery)
O'Mahony, Janet M., Clinical Assistant Professor
Panhuysen, Carolien I., MD, Adjunct Instructor
Panzarella, Philip F., MD, Clinical Instructor
Pargament, Jeffrey M., MD, Clinical Instructor
Parshall, James W., MD, Clinical Instructor
Passen, Martin I., MD, Clinical Assistant Professor
Perez-Alard, Jorge, MD, Clinical Instructor
Perpall, Arthur E., MD, Medical School Assistant Professor (Surgery)
Rapoport, Morton I., MD, Professor
Raskin, Howard F., MD, Clinical Associate Professor
Reed, John P., MD, Clinical Instructor
Reichmister, Jerome P., MD, Clinical Associate Professor (Surgery)
Reider, Ruben, MD, Clinical Instructor
Rosenberg, Bruce E., MD, Clinical Instructor
Ruppert, Gary B.,MD, Clinical Assistant Professor
Salkeld, John, MD, Clinical Assistant Professor

Samuels, Caroline, MD, Clinical Assistant Professor
Schaefer, Edward W., MD, Clinical Assistant Professor
Scharff, David S., MD, Clinical Instructor
Schmidt, Marcia C., MD, Clinical Assistant Professor
Schwartz, David A., DO, Clinical Instructor
Shamszad, Mahin, MD, Clinical Assistant Professor
Sheehan, Charles E., MD, Clinical Instructor
Sheer, Leon G., MD, Clinical Instructor
Shen, Steve Yu-Liang, MD, Clinical Associate Professor
Sheridan, Martin E., MD, Clinical Instructor
Shocket, Robert B., MD, Clinical Assistant Professor
Shuhart, Dwayne, MD, Clinical Instructor
Simpler, Dana S., MD, Clinical Instructor
Sloane, Peter J., MD, Clinical Assistant Professor
Sneed, Ernest J., MD, Clinical Instructor
Sobel, Tamara S., MD, Clinical Assistant Professor
Spiggle, Wayne S., MD, Clinical Associate Professor
Strain, Francis X., MD, Clinical Assistant Professor
Streyle, Edward H., BSN, Clinical Assistant Professor
Taylor, Henry G., MD, Clinical Instructor
Todd, Nevins W., MD, Clinical Assistant Professor
Tso, Elizabeth, MD, Medical School Associate Professor (Surgery)
Updike, Ralph E., MD, Clinical Assistant Professor
Vidaver, Lawrence, MD, Clinical Instructor
Walker, Stanley, MD, Clinical Assistant Professor
Webber, Jan D., MD, Clinical Assistant Professor
Whye, DePriest W., MD, Clinical Assistant Professor (Surgery)
Wilson, Donald E., MD, Professor and Dean
Wilson, Thomas S., Clinical Instructor
Winn, Daniel J., MD, Clinical Instructor
Winston, Reed A., MD, PhD, Clinical Assistant Professor (Surgery)
Wolfsthal, Susan D., MD, Medical School Associate Professor and Director, Residency Training Program; Vice Chair/Education
Xu, Jianfeng, MD, MPH, Assistant Professor
Yen, Michael C., MD, Clinical Associate Professor
Yorkoff, Benjamin K., MD, Clinical Assistant Professor
Zajac, Christophe J., MD, Clinical Instructor
Zolet, David E., MD, Clinical Assistant Professor
Zygler, Samuel, MD, Clinical Assistant Professor

DIVISION OF CARDIOLOGY

Herbert Berger Professor of Medicine and Head
Robert A. Vogel, MD

Aiello, David B., MD, Clinical Assistant Professor
Altshuler, Jonathan A., MD, Clinical Assistant Professor
Badro, Bassim, MD, Clinical Instructor
Balke, C. William, MD, Associate Professor
Benitez, Roberto M., MD, Medical School Assistant Professor
Bennett, Susan K., MD, Clinical Assistant Professor
Bittar, George D., MD, Clinical Assistant Professor
Bush, Trudy L., PhD, Professor (Epidemiology)
Carliner, Nathan H., MD, Medical School Professor
Chopra, Ashok K., MD, Clinical Instructor
Cohen, Miriam L., MD, Clinical Assistant Professor
Corretti, Mary C., MD, Medical School Associate Professor
Cummings, Charles C., MD, Clinical Assistant Professor
Doyle, Kevin J., MD, Clinical Assistant Professor
Fisher, Michael L., MD, Medical School Professor
Freudenberger, Ronald S., MD, Assistant Professor
Froman, Deborah M., RN, Clinical Instructor
Gellman, Joel, MBBCh, Assistant Professor
Gold, Michael R., MD, PhD, Associate Professor
Gottlieb, Sidney O., MD, Clinical Associate Professor
Gottlieb, Stephen S., MD, Associate Professor
Gurbel, Paul A., MD, Clinical Assistant Professor
Hajj, Makram Y., MD, Clinical Assistant Professor
Havas, Stephen W., MD, Medical School Associate Professor (Epidemiology)
Herzog, William R. Jr., MD, Medical School Assistant Professor
Insel, Jerald, MD, Clinical Assistant Professor
Jackson, David S., MD, Clinical Assistant Professor
Jerome, Scott D., DO, Clinical Instructor
Kastor, John A., MD, Professor
Keleman, Michael H., MD, Clinical Assistant Professor
Kim, Hyun J., MD, Clinical Instructor
Kircher, Barbara J., MD, Clinical Assistant Professor
Lang, Jay M., DO, Clinical Instructor
Laskey, Warren K., MD, Medical School Professor
Magram, Martin Y., MD, Clinical Assistant Professor
Meilman, Henry, MD, Clinical Assistant Professor
Miller, Michael, MD, Medical School Associate Professor
Moghbeli, Homayoon, MD, Clinical Instructor
Morris, Frank H., MD, Clinical Instructor
Nair, Vijayachandra S., MD, Clinical Instructor
Narun, Lawrence G., MD, Clinical Instructor

Okun, Marc, MD, Clinical Assistant Professor
Olsovsky, Mary R., MD, Visiting Clinical Instructor
Peters, Robert W., MD, Medical School Professor
Plack, Raymond, MD, Clinical Assistant Professor
Plantholt, Stephen J., MD, Clinical Instructor
Plotnick, Gary D., MD, Medical School Professor
Pollock, Stephen H., MD, Clinical Instructor
Pressel, Michael D., MD, Clinical Instructor
Quartner, Jeffrey L., MD, Clinical Assistant Professor
Ramirez, Jorge M., MD, Clinical Assistant Professor
Reiber, Johan H.C., PhD, Adjunct Professor
Reilly, Joseph M., MD, Clinical Assistant Professor
Ricely, James C., DO, Clinical Assistant Professor
Robinson, Shawn W., MD, Assistant Professor
Rodriguez, Samuel, MD, Clinical Assistant Professor
Roffman, David S., PharmD, Research Assistant Professor
Rubinstein, Michael N., MD, Clinical Instructor
Schaeffer, Allen H., MD, Clinical Assistant Professor
Schechter, Ronald D., MD, Clinical Assistant Professor
Sharma, Susheel K., MD, Clinical Assistant Professor
Shorofsky, Stephen R., MD, PhD, Assistant Professor
Stafford, J. Lawrence, MD, Medical School Assistant Professor
Suddath, William O., MD, Clinical Instructor
Sutton, Frederick J., MD, Clinical Associate Professor
Valenti, Stephen A., MD, Clinical Assistant Professor
Vogel, Robert A., MD, Professor and Head
Whipps, Randolph G., MD, Clinical Assistant Professor
Wohl, Barry, MD, Clinical Assistant Professor
Zawodny, Robert V., MD, Clinical Assistant Professor
Zimrin, David, MD, Clinical Instructor
Ziskind, Andrew A., MD, Medical School Associate Professor
Zoda, Albert R., MD, Clinical Assistant Professor

DIVISION OF DIABETES, OBESITY AND NUTRITION

Professor and Head
Alan R. Shuldiner, MD

Beamer, Brock A., MD, Clinical Instructor
Celi, Francesco S., MD, Visiting Assistant Professor
Harper, Michael, MD, Clinical Instructor
McLenithan, John C., PhD, Research Assistant Professor
Shuldiner, Alan R., Professor and Head
Silver, Kristi D., MD, Assistant Professor
Streeten, Elizabeth A., Clinical Assistant Professor

DIVISION OF ENDOCRINOLOGY

Professor and Head
John F. Wilber, MD

Allen, Elsie M., MD, Medical School Associate Professor
Carnell, Nathan E., MD, Clinical Assistant Professor
Cheikh, Issam E., MD, Clinical Associate Professor
Dicke, James A., MD, Clinical Assistant Professor
Donner, Thomas W., MD, Medical School Assistant Professor
Haines, Stuart T., PharmD, Clinical Instructor (Pharmacy)
Hamilton, Bruce P., MB,ChB, Professor
Hamilton, Jennifer H., BM,BcH, Medical School Assistant Professor
Hausner, Peter MD, Professor (Psychiatry)
Janoski, Alfonso H., MD, Clinical Assistant Professor
Kling, Mitchel A., MD, Associate Professor (Psychiatry)
Lawrence, George D., MD, Clinical Associate Professor
Mersey, James H., MD, Clinical Associate Professor
Pavlov, Eugenia P., MD, Clinical Assistant Professor
Szkudlinski, Mariusz W., MD, PHD, Research Assistant Professor
Valente, William A., MD, Clinical Associate Professor
Weintraub, Bruce D., MD, Medical School Professor
Wilber, John F., MD, Professor and Head

DIVISION OF GASTROENTEROLOGY

Professor and Head
Stephen P. James, MD

Abraham, John M., PhD, Research Assistant Professor
Baum, Richard A., MD, Clinical Associate Professor
Bloom, Peter D., MD, Clinical Instructor
Boedeker, Edgar C., MD, Medical School Professor
Cox, Michael E., MD, Clinical Assistant Professor
Darwin, Peter E., MD, Medical School Assistant Professor
Dutta, Sudhir K., MBBS, Clinical Professor
Fantry, George T., MD, Medical School Associate Professor
Fishbein, David M., MD, Clinical Assistant Professor
Goldberg, Neil D., MD, Clinical Assistant Professor
Greenwald, Bruce D., MD, Medical School Assistant Professor
Haluszka, Oleh, MD, Medical School Assistant Professor
Hofkin, Gerald A., MD, Clinical Assistant Professor
Howell, Charles D., MD, Medical School Associate Professor
James, Stephen P., MD, Professor and Head
Laurin, Jacqueline M., MD, Medical School Assistant Professor

Mathieson, Robert D., MD, Clinical Assistant Professor
Meltzer, Stephen J., MD, Professor
Mills, Lawrence E. Jr., MD, Clinical Assistant Professor
Morrison, Stanley A., MD, Clinical Assistant Professor
Narang, Ashok, MBBS, Clinical Assistant Professor
Pichney, Lisa S., MD, Clinical Assistant Professor
Posner, David B., MD, Clinical Assistant Professor
Rosenthal, Linda E., MD, Clinical Assistant Professor
Rutherford, Robin E., MD, Medical School Assistant Professor
Saltzberg, David M., MD, Clinical Assistant Professor
Schreiber, Jonathan B., MD, Clinical Assistant Professor
Souza, Rhonda F., MD, Assistant Professor
Williams, Richard B., MD, Clinical Associate Professor
Wilson, Keith D., MD, Assistant Professor

DIVISION OF GENERAL INTERNAL MEDICINE

Medical School Assistant Professor and Head
Louis J. Domenici, M.D.

Akin, Barbara V., MD, Clinical Assistant Professor
Bartman, Barbara J., MD, Assistant Professor
Bonner, Mack, MD, Clinical Assistant Professor
Brockington, McNeal III, MD, Clinical Assistant Professor
Brown, Angela J., MD, Medical School Assistant Professor
Brown, David M., MD, Clinical Assistant Professor
Cloeren, Mariane, MD, Clinical Assistant Professor
Domenici, Louis J., MD, Medical School Assistant Professor and Head
Fairchild, Emily S., MD, Medical School Assistant Professor
Ferguson, Robert P., MD, Clinical Professor
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Loewenstein, Richard, MD, Clinical Assistant Professor
Loreck, David, MD, Medical School Assistant Professor
Love, Lois H., MD, Clinical Assistant Professor
Mallott, David, MD, Medical School Associate Professor
Manzanera, Elena, Clinical Assistant Professor
Marcus, Lori A., Clinical Instructor
Martinez, Pedro, MD, Medical School Assistant Professor
Massey, Anthony, MD, Medical School Assistant Professor
McCann, Merle, MD, Clinical Assistant Professor
McClelland, Paul, MD, Adjunct Assistant Professor
McDuff, David, MD, Medical School Associate Professor
Medoff, Deborah, PhD, Research Assistant Professor
Menon, Kumar, PhD, Research Assistant Professor
Merlis, Daniel, Clinical Assistant Professor
Merryman, Mary Beth, Clinical Assistant Professor
Mghir, Rim, MD, Clinical Assistant Professor
Miller, Alan, MD, Clinical Assistant Professor
Miller, Dinah, MD, Clinical Assistant Professor
Monopolis, Spyros, MD, Clinical Assistant Professor
Monroe, Russell R., MD, Professor
Moricle, LeaAnn, MD, Clinical Assistant Professor
Munoz, Robinson, MD, Medical School Assistant Professor
Muneses, Todd, MD, Adjunct Instructor
Munson, Robert, Research Associate
Myers, Patrick C., Research Associate
Nurco, David N., Research Professor
O'Callaghan, P. Gayle, PhD, Clinical Assistant Professor
Oglesby, Thomas J., MD, Clinical Assistant Professor
Okum, Marjorie, PhD, Clinical Assistant Professor
Olivares, Enrique, MD, Clinical Instructor
Olsson, James, PhD, Clinical Assistant Professor
Orgel, Laurie, MD, Clinical Assistant Professor
Osher, Fred, MD, Medical School Associate Professor
Oster, Gerald D., PhD, Clinical Associate Professor
Paskewitz, David, PhD, Medical School Assistant Professor
Patel, Smita, MD, Adjunct Associate Professor
Patterson, Raymond F., MD, Clinical Associate Professor
Pecevich, Mark, MD, Medical School Associate Professor
Penna, Manuel, MD, Clinical Associate Professor
Perret, Yvonne, LCSW, Clinical Assistant Professor

Peszke, Michael, MB, BCh, Clinical Professor
Phillips, Jay, MD, Clinical Assistant Professor
Phillips, Robert, MD, Adjunct Associate Professor
Phillips, Sheridan, PhD, Associate Professor
Plaut, S. Michael, PhD, Associate Professor
Purcell, Penelope, Clinical Assistant Professor
Qin, Dongyun, MD, Faculty Research Assistant
Quigley, Joan, Faculty Research Assistant
RachBeisel, Jill, MD, Medical School Assistant Professor
Rapoport, Rosalie, Clinical Assistant Professor
Rappeport, Jonas, MD, Clinical Professor Emeritus
Raskin, Allen, PhD, Research Professor
Rassoulpour, Arash, BS, Faculty Research Assistant
Rath, Frank H. Jr., PhD, Clinical Associate Professor
Raymond, Linda, MD, Clinical Assistant Professor
Regenold, William, MD, Medical school Assistant Professor
Richardson, Charles M., MD, Clinical Instructor
Roberts, Paul, MD, Clinical Assistant Professor
Roberts, Rosalinda, PhD, Research Associate Professor
Robinson, Betty, MD, Adjunct Associate Professor
Robinson, Charles, MD, Medical School Assistant Professor
Rose, Deborah, MD, Clinical Assistant Professor
Ross, Donald, MD, Clinical Associate Professor
Roskes, Eric, MD, Medical School Assistant Professor
Rothbaum, Kenneth L., MD, Clinical Assistant Professor
Rothlind, Johannes, C., PhD, Assistant Professor
Rudo, Andrew, MD, Clinical Assistant Professor
Ruskin, Paul, MD, Medical School Assistant Professor
Rushton, Joseph, Research Associate
Russo, Thomas, PhD, Medical School Assistant Professor
Saidel, Donald H., PhD, Clinical Assistant Professor
Sakles, Constantine J., MD, Medical School Professor
Sandler, Lawrence, MD, Clinical Assistant Professor
Sarles, Richard, MD, Medical School Professor
Schmitt, Rosemary, Research Associate
Schnaper, Nathan, MD, Clinical Professor Emeritus
Schoonover, Frances W., MD, Clinical Assistant Professor
Scott, Jack E., ScD, Research Assistant Professor
Schwarcz, Robert, PhD, Research Professor
Schwartz, Eugene, Adjunct Assistant Professor
Schwartz, Robert P., MD, Medical School Assistant Professor
Sharfstein, Stephen, MD, Clinical Professor
Shepard, Paul, PhD, Research Associate Professor
Siegel, Madelyn J., MD, Clinical Assistant Professor
Silver, Stuart B., MD, Clinical Associate Professor
Skotzko, Christine, MD, Medical School Assistant Professor

Sokal, Dina, MD, Clinical Assistant Professor
Sokal, Joseph, MD, Medical School Assistant Professor
Solounias, Bernadette, MD, Clinical Assistant Professor
Spector, Jack, PhD, Clinical Assistant Professor
Spier, Scott, MD, Clinical Associate Professor
Stefanek, Michael, PhD, Medical School Associate Professor
Steinbach, Irvin, Clinical Instructor
Steinberg, John, MD, Clinical Assistant Professor
Storch, Daniel, MD, Clinical Associate Professor
Strahan, Susan T., MD, Clinical Assistant Professor
Styrt, Jerome, MD, Clinical Associate Professor
Summerfelt, Ann, Clinical Instructor
Taghezadeh, Fereidoon, MD, Clinical Assistant Professor
Talbott, John A., MD, Professor and Chair
Tamminga, Carol, MD, Research Professor
Tang, Cecelia, MD, Medical School Assistant Professor
Taylor, Ronald J., MD, Adjunct Assistant Professor
Tellefsen, Christiane, MD, Clinical Assistant Professor
Thaker, Gunvant, MD, Research Associate Professor
Thompson, Donald, MD, Medical School Assistant Professor
Thompson, James, MD, Clinical Professor
Tiegel, Stuart, M.S.W., Medical School Assistant Professor
Twery, Michael, PhD, Research Assistant Professor
Ulgur, Ulku, MD, Clinical Assistant Professor
Underhill, Lynn, LCSW, Clinical Instructor
Urbaitis, John, MD, Adjunct Associate Professor
Varghese, Raju, EdD, Clinical Associate Professor
Vimalananda, Meenaksho, MD, Clinical Assistant Professor
Vogel, Michael, PhD, Research Associate Professor
VonMuehlen, Lutz H., MD, Clinical Assistant Professor
Waltrip, Royce II, MD, Research Assistant Professor
Warner, Beth, PhD, Medical School Assistant Professor
Warres, Neil, MD, Clinical Assistant Professor
Warwick, Arthur M., MD, Medical School Assistant Professor
Weiner, Elaine E., MD, Assistant Professor
Weinstein, Stanley E., PhD, Clinical Associate Professor
Weintraub, Eric, MD, Medical School Assistant Professor
Weintraub, Walter, MD, Clinical Professor
Weist, Mark, PhD, Medical School Associate Professor
White, Robert K., Clinical Assistant Professor
Whitefield, Steven, MD, Medical School Assistant Professor
Widra, Patricia, MD, Clinical Instructor
Wimmer, William, MD, Clinical Assistant Professor
Work, Henry, MD, Clinical Professor
Wu, Hui-Qiu, PhD, Research Assistant Professor
Zaremba, Sandra, Faculty Research Assistant
Ziesat, Harold, PhD, Clinical Associate Professor

DEPARTMENT OF RADIATION ONCOLOGY

Professor and Chair
Carl M. Mansfield, MD, ScD, FACR, FACNM

Ames, John W., MD, Assistant Professor
Amin, Pradip P., MD, School Assistant Professor
Balcer-Kubiczek, Elizabeth, PhD, Associate Professor
Cheston, Sally B., MD, Assistant Professor
Harrison, George, PhD, Associate Professor
Jacobs, Maria C., MD, School Assistant Professor
Kennedy, Andrew S., MD, Assistant Professor
MacVittie, Thomas J., PhD, Adjunct Associate Professor
Rhee, Juong G., PhD, Associate Professor
Strohl, Roberta A., MN, School Associate Professor
Suntharalingam, Mohan, MD, Assistant Professor
Yu, Cedric X, DSc, Assistant Professor

DEPARTMENT OF SURGERY

Professor and Chair
Bruce E. Jarrell, MD

DIVISION OF EMERGENCY MEDICINE

Professor and Head
Brian J. Browne, MD

Alberto, Gino, DO, Clinical Assistant Professor
Babb, Kevin O., MD, Instructor
Barish, Robert A., MD, Professor
Bass, Robert R., MD, Clinical Associate Professor
Belleza, Walter B., MD, Instructor
Bissell, Richard A., PhD, Adjunct Assistant Professor
Bolgiano, Edward B., MD, Assistant Professor
Browne, Brian J., MD, Professor and Head
Butler, Kenneth H., DO, Assistant Professor
Cotto-Cumba, Cynthia, MD, Instructor
Crisanti, Joseph S., MD, Clinical Instructor
DeFeo, Linda M., MD, JD, Clinical Assistant Professor
D'Orta, James A., MD, Clinical Instructor
Doyon, Suzanne, MD, Instructor
Eastham, James N., ScD, Adjunct Assistant Professor
Edelstein, Sol, MD, Clinical Professor

Euerle, Brian D., MD, Assistant Professor
Floccare, Douglas, MD, Clinical Assistant Professor
Fortenberry, Charles D., MD, Assistant Professor
Gaasch, Wade R., MD, Assistant Professor
Geroff, Adam J., MD, Clinical Instructor
Gershon, Terri S., MD, Clinical Instructor
Gimbel, Jeffrey H., MD, MPH, Clinical Instructor
Goyal, Deepi G., MD, Instructor
Groleau, Georgina A., MD, Assistant Professor
Halligan, Luanne F., MD, Clinical Assistant Professor
Hexter, David A., MD, MPH, Clinical Assistant Professor
Hill, Edna R., MD, Clinical Assistant Professor
Hsu, Samuel S., MD, Instructor
Jackson, Christine M., MD, Assistant Professor
Jerrard, David A., MD, Associate Professor
Joffe, Steven L., MD, Clinical Instructor
Johnson, Dean E., MD, Assistant Professor
Kuo, Dick, MD, Assistant Professor
Lazo, Christina M., MD, Instructor
Ligon-Nunez, Rhamin S., MD, Assistant Professor
Mattu, Amal, MD, Instructor
McPherson, Scott J., MD, Assistant Professor
Morhaim, Daniel K., MD, Clinical Assistant Professor
O'Connell, Jeanne M., MD, Instructor
Olshaker, Jonathan S., MD, Associate Professor
Perpall, Arthur E. Jr., MD, Assistant Professor
Pimentel, Laura, MD, Assistant Professor
Prybus, Kathleen M., DO, Assistant Professor
Robinson, David J., MD, Clinical Instructor
Rolnick, Michael A., MD, Assistant Professor
Rorison, David G., MD, Clinical Assistant Professor
Scott, Carol J., MD, Clinical Assistant Professor
Scruggs, Kevin H., MD, Clinical Assistant Professor
Seaman, Kevin G., MD, Assistant Professor
Stair, Thomas O., MD, Professor
Stone, Roger, MD, Clinical Assistant Professor
Teague, Heidi, M., MD, Instructor
Tso, Elizabeth L., MD, Associate Professor
Vinocur, Leigh, MD, Clinical Assistant Professor
Walker, Benjamin A., MD, Clinical Instructor
Whye, DePriest W. Jr., MD, Clinical Assistant Professor
Winston, Reed A., MD, PhD, Clinical Assistant Professor
Witting, Michael D., MD, Assistant Professor

DIVISION OF GENERAL SURGERY

Professor and Head
Barbara L. Bass, MD

Alvarez, Carlos, MD, Assistant Professor
Badder, Elliott M., MD, Associate Professor
Bass, Barbara L., MD, Professor and Head
Buchbinder, Dale, MD, Clinical Professor
Cho, Eugene, MD, Instructor
Clark, Francis A. Jr., MD, Clinical Assistant Professor
Cox, Everard F., MD, Clinical Associate Professor
DeMarco, Salvatore J., MD, Clinical Assistant Professor
Dunkin, Brian J., MD, Assistant Professor
Fitzpatrick, James L., MD, Assistant Professor
Flowers, John L., MD, Associate Professor
Friedman, Neil B., MD, Clinical Assistant
Graham, Scott M., MD, Clinical Associate Professor
Gudwin, Arthur L., MD, Clinical Assistant Professor
Harrison, Miles G. Jr., MD, Clinical Assistant Professor
Imbembo, Anthony L., MD, Professor
King, A. Daniel Jr., MD, Clinical Assistant Professor
Levine, Hilbert M., MD, Clinical Assistant Professor
Macon, William L., MD, Clinical Associate
Mir, Sidney S., MD, Clinical Associate Professor
Munster, Andrew M., MD, Clinical Associate Professor
Novin, Neil, MD, Clinical Associate Professor
Padussis, Constantine J., MD, Clinical Associate
Ramsey, Harold E., MD, Clinical Instructor
Raneri, Anthony J., MD, Clinical Assistant Professor
Schnaper, Lauren A., MD, Clinical Associate Professor
Schwartzentruber, Douglas J., MD, Clinical Assistant Professor
Scovill, William A., MD, Clinical Professor
Silva, John S., MD, Adjunct Associate Professor
Singer, John A., MD, Clinical Assistant Professor
Smoot, Roy T., MD, Clinical Instructor
Steers, John A., MD, Clinical Assistant Professor
Stump, Kyle C., DVM, Assistant Professor
Szczypinski, Adam F., MD, Clinical Assistant Professor
Thrasher, Terry, PhD, Professor
Tortolani, Edmund C., MD, Clinical Assistant Professor
Toy, Frederick K., MD, Clinical Instructor
Vachon, Debra A., MD, Clinical Assistant Professor
Wang, Jian-Ying, MD, PhD, Associate Professor
Wolpert, Seth I., MD, Assistant Professor

DIVISION OF ORTHOPEDIC SURGERY

Professor and Head
Andrew R. Burgess, MD

Abrams, Robert C., MD, Clinical Associate Professor
Adams, RD, DPM, Clinical Assistant Professor
Apostolo, Paul M., MD, Clinical Assistant Professor
Bands, Roy E., MD, Clinical Instructor
Baugher, William H., MD, Clinical Assistant Professor
Becker, Larry, MD, Clinical Assistant Professor
Belkoff, Stephen M., PhD, Assistant Professor
Bergfeld, John A., MD, Clinical Professor
Brouillet, George H., MD, Clinical Instructor
Brumback, Robert J., MD, Professor
Burgess, Andrew R., MD, Professor and Head
Ciotola, Joseph A., MD, Clinical Instructor
Cohen, Phillip M., DPM, Clinical Instructor
Copeland, Carol E., MD, Assistant Professor
Curl, Leigh Ann, MD, Assistant Professor
Curcin, Aleksandar, MD, Assistant Professor
DeDeyne, Patrick, PhD, Assistant Professor
Diamond, Eric L., DPM, Clinical Instructor
Diamond, Liebe S., MD, Clinical Associate Professor
Edwards, Charles C., MD, Professor
Eglseder, W. Andrew, MD, Assistant Professor
Ellis, Michael A., MD, Clinical Assistant Professor
Engh, Charles A., Sr., MD, Clinical Associate Professor
Engh, Charles A., Jr., MD, Clinical Assistant Professor
Engh, Gerard A., MD, Clinical Associate Professor
Fedder, Ira L., MD, Clinical Instructor
Friedler, Stanley, MD, Clinical Assistant Professor
Greenstein, George H., MD, Clinical Assistant Professor
Harries, Thomas J., MD, Clinical Instructor
Herzenberg, John E., MD, Associate Professor
House, Homer C., MD, Clinical Assistant Professor
Jinnah, Riyaz H., MD, Clinical Associate Professor
Kenzora, John E., MD, Professor
Lenet, Marc D., DPM, Clinical Assistant Professor
Levine, Alan M., MD, Clinical Professor
Martin, Nicholette M., MD, Clinical Instructor
Matz, Samuel O., MD, Clinical Instructor
Moorman, Claude T., MD, Assistant Professor
Paley, Dror, MD, Professor
Pollak, Andrew N., MD, Assistant Professor
Reichmeister, Jerome P., MD, Clinical Associate Professor

Rosenthal, Mark S., MD, Clinical Assistant Professor
Sherman, Michael M., DPM, Clinical Assistant Professor
Silberstein, Charles, MD, Clinical Assistant Professor
Simmons, Shelton C., III, DMD, MD, Clinical Instructor
Smulyan, William I., MD, Clinical Instructor
Sothoron, Haddox W., MD, Clinical Assistant Professor
Spence, Kenneth F., MD, Clinical Assistant Professor
Sydney, Sam V., MBBS, Clinical Instructor
Tansey, John J., MD, Clinical Associate Professor
Tetsworth, Kevin D., MD, Assistant Professor
Topaleski, Tim, PhD, Adjunct Assistant Professor
Turen, Clifford H., MD, Assistant Professor
von Kessler, Kirby, MD, Clinical Assistant Professor
Whitten, Thomas V., MD, Clinical Instructor
Wolff, Gregg, MD, Clinical Instructor
Wood, James E., MD, Clinical Assistant Professor
Zadek, Robert E., MD, Clinical Associate Professor
Zeitouneh, Emad, MD, Clinical Instructor
Zhu, Wenhu, PhD, Adjunct Assistant Professor

DIVISION OF OTOLARYNGOLOGY—HEAD AND NECK SURGERY

Assistant Professor and Acting Head
Paul F. Castellanos, MD

Baker, Dole P., MD, Clinical Assistant Professor
Biedlingmaier, John F., MD, Clinical Associate Professor
Blackston, Marilyn L., MD, Assistant Professor
Blum, Stanley L., MD, Clinical Instructor
Castellanos, Paul F., MD, Assistant Professor and Acting Head
Cicci, Regina L., PhD, Assistant Professor
Clayton, Marco, MD, PhD, Clinical Instructor
Clayton, Robert A., MD, Clinical Instructor
Cosentino, Enzo, MD, Clinical Assistant Professor
Emery, Brian E., MD, Assistant Professor
Fletcher, Margaret M., MD, Clinical Associate Professor
Formby, Charles C., PhD, Associate Professor
Goldstein, Moise, PhD, Adjunct Professor
Gray, William C., MD, Associate Professor
Hazell, Jonathan W.P., MBBChir, Visiting Professor
Jastreboff, Malgorzata M., PhD, Assistant Professor
Jastreboff, Pawel J., PhD, Professor
Khan, Ahsan S., MD, Clinical Instructor
Kleiman, Lee A., MD, Clinical Instructor

Letowski, Tomasz, PhD, Adjunct Associate Professor
Leveque, Hubert, MD, Clinical Assistant Professor
Molter, David W., MD, Assistant Professor
Nelson, Peggy, B., PhD, Assistant Professor
Ominsky, Barry E., MD, Clinical Assistant Professor
Pardo, Juan M., MD, Clinical Instructor
Penner, Merrilynn J., PhD, Adjunct Professor
Revoille, Sally G., PhD, Adjunct Professor
Robinson, David, PhD, Adjunct Professor
Rutledge, Janet C., PhD, Associate Professor
Sawyer, Robert, MD, Associate Professor
Sklarew, Eric C., MD, Clinical Instructor
Smith-Abouchacra, Kim M., PhD, Adjunct Assistant Professor
Steiner, Albert, MD, Clinical Assistant Professor
Stone, Maureen L., PhD, Professor
Toner, Thomas J. Jr., MD, Clinical Instructor

DIVISION OF PLASTIC AND RECONSTRUCTIVE SURGERY

Professor and Head
Nelson H. Goldberg, MD

Ballesteros, Ruben F., MD, Clinical Assistant Professor
Bickel, Kyle, MD, Clinical Instructor
Carlton, James M., MD, Assistant Professor
Crawley, William A., MD, DDS, Clinical Instructor
Franks, Denis, MD, Clinical Associate
Goldberg, Nelson H., MD, Professor and Head
Grace, George T., MD, Clinical Assistant Professor
Hill, Terri L., MD, Clinical Instructor
Hirata, Richard M., MD, Clinical Assistant Professor
Hoopes, John E., MD, Clinical Professor
Klatsky, Stanley A., MD, Clinical Assistant Professor
Manson, Paul N., MD, Clinical Professor
Orlando, Joseph C., MD, Clinical Assistant Professor
Plasse, Jerome S., MD, Clinical Assistant Professor
Ramirez, Oscar M., MD, Clinical Assistant Professor
Ringelman, Paul R., MD, Clinical Instructor
Robertson, Bradley C., MD, DDS, Assistant Professor
Saunders, John R. Jr., MD, Clinical Assistant Professor
Slezak, Sheri, MD, Associate Professor
Spence, Robert J., MD, Clinical Assistant Professor
Vanderkolk, Craig A., MD, Clinical Assistant Professor
Weiss, Alan J., MD, Clinical Instructor
Wilhelmsen, Hans R., MD, Clinical Assistant Professor
Wong, Leslie, MD, Clinical Instructor

DIVISION OF SURGICAL SERVICES FOR INFANTS AND CHILDREN

Professor and Head
J. Laurance Hill, MD

Buck, James R., DVM, MD, Clinical Assistant Professor
Colombani, Paul M., MD, Clinical Assistant Professor
Haller, J. Alex Jr., MD, Clinical Professor
Hill, J. Laurance, MD, Professor and Head
Paidas, Charles N., MD, Clinical Assistant Professor
Strauch, Eric, MD, Assistant Professor
Voigt, Roger W., MBBCh, Assistant Professor

DIVISION OF THORACIC AND CARDIOVASCULAR SURGERY

Professor and Head
Joseph S. McLaughlin, MD

Attar, Safuh, MD, Professor Emeritus

Cardarelli, Marcelo G., MD, Assistant Professor
Conte, John V., MD, Assistant Professor
Downing, Stephen W., MD, Assistant Professor
Foster, Andrew H., MD, Associate Professor
Gamliel, Ziv, MD, Assistant Professor
Krasna, Mark J., MD, Associate Professor
Leacock, Ferdinand S., MD, Clinical Instructor
McLaughlin, Joseph S., MD, Professor And Head
Mech, Karl F. Jr., MD, Clinical Instructor
Sell, Jeffrey E., MD, Clinical Assistant Professor
Sequeira, Alejandro J., MD, Associate Professor
Sonett, Joshua R., MD, Assistant Professor
Wei, Chi-Ming, PhD, Associate Professor

DIVISION OF TRANSPLANTATION SURGERY

Professor and Head
Stephen T. Bartlett, MD

Bartlett, Stephen T., MD, Professor and Head
Colonna, II, John O., MD, Associate Professor
Farney, Alan, MD, Assistant Professor
Hadley, Gregg A., PhD, Associate Professor

Jarrell, Bruce E., MD, Professor and Chairman
Philosophe, Benjamin, MD, Assistant Professor
Schweitzer, Eugene J., MD, Associate Professor

DIVISION OF TRAUMA AND CRITICAL CARE

Professor and Head
Thomas M. Scalea, MD

Champion, Howard R., MD, Professor
Chiu, William, MD, Instructor
Cooper, Carnell, MD, Assistant Professor
Darlington, Daniel N., PhD, Associate Professor
Gann, Donald S., MD, Professor
Gens, David R., MD, Assistant Professor
Henry, Sharon M., MD, Assistant Professor
Militello, Philip R., MD, Assistant Professor
Myers, Roy A.M., MD, Assistant Professor
Napolitano, Lena M., MD, Associate Professor
Scalea, Thomas, MD, Professor and Head
Rodriguez, Aurelio, MD, Associate Professor
Soderstrom, Carl A., MD, Professor
Wiles, Charles E., MD, Associate Professor

DIVISION OF UROLOGY

Professor and Head
Stephen C. Jacobs, MD

Campbell, Edward W. Jr., MD, Professor Emeritus

Alexander, Richard B., MD, Associate Professor
Applestein, Marc B., MD, Clinical Instructor
Berger, Bruce W., MD, Clinical Assistant Professor
Bergmann, Frederick G., MD, Clinical Instructor
Bezirdjian, Lawrence C., MD, Clinical Assistant Professor
Brodie, Ray Jr., MD, Clinical Instructor
Brown, Michael W., MD, Clinical Instructor
Burger, Robert H., MD, Clinical Assistant Professor
Busky, Stephen M., MD, Clinical Instructor
Chai, Toby C., MD, Assistant Professor
Cherry, Joel M., MD, Clinical Assistant Professor
Cohen, Stephen P., MD, Clinical Associate Professor
Dhanda, Anand M., MBBS, Clinical Instructor

Filderman, Peter S., MD, Clinical Assistant Professor
Galleher, Earl P., MD, Clinical Associate Professor
Gearhart, John P., MD, Adjunct Associate Professor
Gessler, Robert A., MD, Clinical Instructor
Harne, Gary F., MD, Clinical Instructor
Howard, Ralph M., MD, Clinical Assistant Professor
Jacobs, Stephen C., MD, Professor And Head
Jaskulsky, Stephen R., MD, Clinical Instructor
Jeffs, Robert D., MD, Adjunct Professor
Kalash, Suhayl S., MD, Clinical Associate Professor
Kaplan, Harold J., MD, Clinical Assistant Professor
Kyprianou, Natasha, PhD, Associate Professor
Lerner, Brad D., MD, Clinical Instructor
Levin, Richard, MD, Clinical Instructor
Mamo, George J., MD, Clinical Instructor
Naslund, Michael J., MD, Associate Professor
Redwood, Stanley M., MD, Clinical Instructor
Schonwald, Harvey N., MD, Clinical Instructor
Sclama, Anthony O., MD, Clinical Instructor
Shaw-Taylor, Kofi E., MD, Clinical Instructor
Shpritz, Louis A., MD, Clinical Assistant Professor
Singh, Bhupinder, MD, Clinical Instructor
Sklar, Geoffrey N., MD, Assistant Professor
Smith, Harry W., MD, Clinical Instructor

DIVISION OF VASCULAR SURGERY

Professor and Head
William R. Flinn, MD

Benjamin, Marshall E., MD, Assistant Professor
Flinn, William R., MD, Professor and Head
Killewich, Lois A., MD, PhD, Associate Professor
Lilly, Michael P., MD, Associate Professor
Queral, Luis A., MD, Clinical Associate Professor

PROGRAM IN TRAUMA

Professor and Director
Thomas Scalea M., MD,

Bickel, Kyle D., MD, Clinical Instructor (Surgery)
Blenko, John W., MD, Assistant Professor (Anesthesiology)
Boehm, Clifford E., MD, Assistant Professor (Anesthesiology)

Britten, John S., MD, Associate Professor (Medicine)
Brumback, Robert J., MD, Professor (Surgery)
Burgess, Andrew R., MD, Professor (Surgery)
Caplan, Ellis S., MD, Associate Professor (Medicine)
Chiu, William C., MD, Visiting Clinical Instructor (Surgery)
Cline, Harold L., MD, Assistant Professor (Anesthesiology)
Copeland, Carol E., MD, Assistant Professor (Surgery)
Cotto-Cumba, Cynthia, MD, Clinical Instructor (Surgery)
Crawley, William A., MD, Clinical Instructor (Surgery)
Dutton, Richard P., MD, Assistant Professor (Anesthesiology)
Eglseder, Andrew W., MD, Assistant Professor (Surgery)
Fedder, Ira L., MD, Clinical Instructor (Surgery)
Fouche, Yvette L.., MD, Clinical Instructor (Anesthesiology)
Gens, David R., MD, Assistant Professor (Surgery)
Gerold, Kevin B., DO, Assistant Professor (Anesthesiology)
Habashi, Nader M., MD, Assistant Professor (Medicine)
Henry, Sharon M., MD, Assistant Professor (Surgery)
Jaberi, Mahmood, MD, Assistant Professor (Anesthesiology)
Joshi, Manjari, MD, Assistant Professor (Medicine)
Kalish, Murray, MD, Assistant Professor (Anesthesiology)
Kester, Kent E., MD, Volunteer Clinical Instructor (Medicine)
Mackenzie, Colin F., MD, Professor (Anesthesiology)
Manson, Paul N., MD, Clinical Professor (Surgery)
Matz, Samuel O., MD, Clinical Instructor (Surgery)
McCunn, Maureen, MD, Assistant Professor (Anesthesiology)
Militello, Philip R., MD, Assistant Professor (Surgery)
Mulinde, Jean M., MD, Assistant Professor (Medicine)
Myers, Roy A. M., MD, Assistant Professor (Surgery)
Pollak, Andrew N., MD, Assistant Professor (Surgery)
Rabinowitz, Ronald P., MD, Assistant Professor (Medicine)
Reynolds, H. Neal, MD, Associate Professor (Medicine)
Robertston, Bradley C., MD, Assistant Professor (Surgery)
Rodriguez, Aurelio, MD, Professor (Surgery)
Scalea, Thomas M., MD, Professor (Surgery) and Director
Sidhu, Sukhwant, MD, Clinical Instructor (Anesthesiology)
Soderstrom, Carl A., MD, Professor (Surgery)
Sydney, Sam V., MD, Clinical Instructor (Surgery)
Tarantino, David P., MD, Assistant Professor (Anesthesiology)
Turen, Clifford H., MD, Assistant Professor (Surgery)
Wiles, Charles E., MD, Associate Professor (Surgery)
Wong, Lesley, MD, Clinical Instructor (Surgery)

Internships and Residencies Class of 1998

ANESTHESIOLOGY

Maryland (2)
Out-of-State (0)
The Johns Hopkins Hospital

DIAGNOSTIC RADIOLOGY

Maryland (0)
Out-of-State (2)
Brooke Army Medical Center
UMDNJ-Robt Wood Johnson Medical School

EMERGENCY MEDICINE

Maryland (3)
Out-of-State (7)
The Johns Hopkins Hospital
Howard U. Hospital
U. Maryland Hospital
LSU School of Medicine-New Orleans
Mt. Sinai Medical Center-Cleveland
Stanford U. Hospital
SUNY Health Science Center-Syracuse
UMDNJ-Robt Wood Johnson Medical
School/Camden
U. Virginia Health Science Center

FAMILY PRACTICE

Maryland (4)
Out-of-State (14)
Franklin Square Hospital
Altoona Hospital
U. Maryland Hospital
Eastern Virginia Grad Sch of Med
Family Medicine of SW Washington
Indiana U. School of Medicine
Medical Center of Central Georgia
Moses H. Cone Memorial Hospital
Providence Medical Center
Riverside General Hospital
St. Joseph Hospital
U. Florida Health Science Center
U. Virginia
U. Michigan
York Hospital

INTERNAL MEDICINE

Maryland (10)
Out-of-State (28)
The John Hopkins Hospital
Allegheny U. Hospital
U. Maryland Hospital
Baylor College of Medicine
Boston U. Medical Center
Fletcher Allen Health Care
George Washington U. Hospital
Georgetown U. Medical Center
Hospital of the U. Pennsylvania
Maine Medical Center
Montefiore Medical Center
Northwestern U.
St. Mary Medical Center
Strong Memorial Hospital
Temple U. Hospital
Thomas Jefferson U.
UCLA Medical Center
U. Colorado School of Medicine
U. Health Center of Pittsburgh
Walter Reed Army Medical Center

INTERNAL MEDICINE—PRELIMINARY

Maryland (7)
Out of State (3)
U. Maryland Hospital
Georgetown U. Medical Center
Jacobi Medical Center
Montefiore Medical Center

COMBINED PROGRAMS

MED-PEDS:
Maryland (0)
Out of State (3)
Albany Medical Center Hospital
Baylor College of Medicine
U. Utah

MED-ERMD:
Maryland (2)
Out of State(0)
U. Maryland Hospital

MED-PSYC:
Maryland (0)
Out of State (1)
Duke U. Medical College

NEUROSURGERY

Maryland (0)
Out-of-State (2)
Indiana U. Medical Center
U. Pennsylvania Medical Center

OBSTETRICS AND GYNECOLOGY

Maryland (1)
Out-of-State (3)
Sinai Hospital of Baltimore
Georgetown U. Hospital
Howard U. Hospital
U. Medical Center at Stony Brook

OPHTHALMOLOGY

Maryland (1)
Out-of-State (2)
U. Maryland Hospital
St. Vincent's Hospital & Med Ctr
Washington Hospital Center

ORTHOPEDICS

Maryland (2)
Out-of-State (1)
U. Maryland Hospital
U. Illinois at Chicago

OTOLARYNGOLOGY

Maryland (1)
Out-of-State (0)
The Johns Hopkins Hospital

PATHOLOGY

Maryland (1)
Out-of-State (1)
U. Maryland Hospital
Brigham & Women's Hospital

PEDIATRICS

Maryland (4)
Out-of-State (17)
Sinai Hospital of Baltimore
Baylor College of Medicine
U. Maryland Hospital
Brown U.
The Johns Hopkins Hospital
Children's National Medical Center

Duke U. Medical Center
Eastern Carolina Medical Center
Indiana U. Medical Center
Long Island Jewish Medical Center
Milton S. Hershey Medical Center
Rush-Presbyterian-Saint Luke Hospital
St. Christopher's Hospital
Thomas Jefferson U.
Trippler Army Medical Center
U. CA-San Francisco
U. Hospitals of Cleveland

PSYCHIATRY

Maryland (1)
Out-of-State (1)
U. Maryland Hospital
U. South Carolina School of Medicine

SURGERY

Maryland (3)
Out-of-State (7)
U. Maryland Hospital
Carilion Roanoke Memorial Hospital
Bethesda Naval Medical Center
George Washington U. Hospital
Milton S. Hershey Medical Center
Strong Memorial Hospital
SUNY at Buffalo Affiliated Hospitals
UMDNJ-Robt Wood Johnson Med Sch
U. South Florida

SURGERY—PRELIMINARY

Maryland (3)
Out-of-State (3)
The Johns Hopkins Hospital
Georgetown U. Hospital
U. Maryland Hospital
Indiana U. Medical Center
Tulane Affiliated Hospitals

TRANSITIONAL

Maryland (0)
Out-of-State (4)
Frankford Hospital
Lehigh Valley Hospital
Naval Medical Center-San Diego
Tucson Hospital Med Ed Program

UROLOGY

Maryland (1)
Out-of-State (1)
U. Maryland Hospital
U. Texas at Houston

Internships and Residencies Class of 1997

DIAGNOSTIC RADIOLOGY

Maryland (1)
Out-of-State (1)
U. Maryland Hospital
Medical Center of Delaware

EMERGENCY MEDICINE

Maryland (3)
Out-of-State (7)
U. Maryland Hospital
Akron City Hospital
Bowman Gray School of Medicine
Henry Ford Health Science Center
Medical Center of Delaware
Methodist Hospital of Indiana
Rhode Island Hospital
SUNY-HSC at Brooklyn

FAMILY PRACTICE

Maryland (5)
Out-of-State (15)
Franklin Square Hospital
Cabarrus Memorial Hospital
U. Maryland Hospital
Fairfax Family Practice Center
Florida Hospital
Lancaster Health Alliance
Memorial Hospital-Carbondale
Mercer U. School of Medicine
U. North Carolina
U. Texas Medical Branch
U. Florida Health Science Center/JAX
Williamsport Hospital and Med Ctr
Wilson Medical Center—UHS
York Hospital

INTERNAL MEDICINE

Maryland (11)
Out-of-State (34)
The John Hopkins Hospital
Allegheny General Hospital
U. Maryland Hospital
Boston U. Hospital
Brooke Army Medical Center
Brown U.
Eastern Virginia Medical School
George Washington U. Hospital
Georgetown U. Hospital
Louis A. Weiss Memorial Hospital
Mayo Clinic-Jacksonville
Medical Center of Delaware
Mercy Hospital & Medical Center
New England Medical Center Hospital
Northwestern U.
Portsmouth Naval Medical Center
SUNY at Stony Brook
Temple U. Hospital
Thomas Jefferson
Trippler Army Medical Center
UMDNJ-Robt Wood Johnson Med Sch
U. Hospital of Cleveland
U. Alabama Hospital
U. Chicago Hospital
U. Florida
U. Miami/Jackson Memorial Med Cntr
U. Pittsburgh
U. Texas SW Medical School
U. Washington Affiliated Hospitals
Yale-New Haven Hospital
York Hospital

INTERNAL MEDICINE—PRELIMINARY

Maryland (11)
Out-of-State (1)
Sinai Hospital of Baltimore
Medical Center of Delaware
U. Maryland Hospital

COMBINED PROGRAMS

MED-PEDS
Maryland (3)
Out-of-State (2)
U. Maryland Hospital
Geisinger Medical Center
Rhode Island Hospital

MED-PSYC

Maryland (0)
Out-of-State (1)
Duke U. Medical Center

NEUROLOGY

Maryland (2)
Out-of-State (3)
The Johns Hopkins Hospital
Case Western Reserve U.
U. Maryland Hospital
U. Pennsylvania Medical Center
U. Virginia Medical Center

NEUROSURGERY

Maryland (1)
Out-of-State (1)
U. Maryland Hospital
Children's Hospital, Brigham & Women's

OBSTETRICS AND GYNECOLOGY

Maryland (1)
Out-of-State (6)
Sinai Hospital of Baltimore
Allegheny U. Hospital
Emory U.
Thomas Jefferson U. Hospital
U. Florida College of Medicine

OPHTHALMOLOGY

Maryland (1)
Out-of-State (3)
U. Maryland Hospital
Case Western Reserve U.
Hahnemann U.

ORTHOPEDIC SURGERY

Maryland (1)
Out-of-State (2)
U. Maryland Hospital
Hershey Medical Center
Detroit Medical Center

OTOLARYNGOLOGY

Maryland (0)
Out-of-State (5)
Harvard Medical School
Kaiser Permanente Medical Center
New York Eye & Ear Infirmary
Northwestern U.
U. Virginia Medical Center

PEDIATRICS

Maryland (4)
Out-of-State (17)
U. Maryland Hospital

Baylor College of Medicine
Baystate Medical Center
Children's National Medical Center
Eastern Virginia Medical School
Fairfax Hospital
LA County-USC Medical Center
Long Island Jewish
Mercy Hospital of Pittsburgh
Montefiore/Einstein Affil Hosp
New York U. Medical Center
San Diego Naval Hospital
Strong Memorial Hospital
U.C. David Medical Center
U. Texas Medical Branch
Vanderbilt U. Hospital

PHYSICAL MEDICINE AND REHABILITATION

Maryland (0)
Out-of-State (2)
Thomas Jefferson U.
Spaulding Rehab Hospital

PLASTIC SURGERY

Maryland (0)
Out-of-State (1)
Ohio State U. Hospitals

PSYCHIATRY

Maryland (3)
Out-of-State (4)
U. Maryland Hospital
Duke U. Medical Center
Medical College of Wisconsin
Oregon Health Sciences U.
U. Washington Affiliated Hospitals

SURGERY

Maryland (2)
Out-of-State (8)
The Union Memorial Hospital
Catholic Medical Center
U. Maryland Hospital
Fletcher Allen Healthcare MCHV
Good Samaritan Hospital
Naval Medical Center-San Diego
New England Deaconess Hospital
Tulane Affiliated Hospitals
UCLA School of Medicine
UMDNJ-Robt Wood Johnson Sch Med

SURGERY—PRELIMINARY

Maryland (0)
Out-of-State (5)
Brigham & Women's Hospital
Medical Center of Delaware
The Graduate Hospital
U. CA Davis-East Bay

TRANSITIONAL

Maryland (0)
Out-of-State (3)
Riverside Regional Medical Center
U. Hawaii
U. Health Center-Pittsburgh

UROLOGY

Maryland (0)
Out-of-State (3)
Akron General Medical Center
Boston U. Medical Center
Temple U.

Internships and Residencies Class of 1996

DIAGNOSTIC RADIOLOGY

Maryland (1)
Out-of-State (0)
U. Maryland Hospital

EMERGENCY MEDICINE

Maryland (4)
Out-of-State (2)
U.Maryland Hospital
SUNY-HSC at Brooklyn
SUNY-HSC at Syracuse

FAMILY PRACTICE

Maryland (9)
Out-Of-State (16)
Franklin Square Hospital
Baylor College of Medicine
U. Maryland Hospital
Baystate Medical Center
Hamot Medical Center
Hennepin County Medical Center
Idaho State U.
Lancaster General Hospital
Lynchburg Family Practice
MacNeal Hospital
Mayo Graduate School of Medicine
MCV/Blackstone Family Practice
Medical U. South Carolina
Medical College of Wisconsin
Provenant Mercy Family Medicine
Spartanbrg Regional Medical Center
The Malden Hospital
The Medical Center Beaver PA, Inc.
Ventura County Medical Center

INTERNAL MEDICINE

Maryland (13)
Out-of-State (27)
Bethesda Naval Hospital
Baylor College of Medicine
Sinai Hospital of Baltimore
Boston U. Medical Cntr
The Johns Hopkins Hospital
Georgetown U. Medical Center
U. Maryland Hospital
Medical College of Virginia
Montefiore Medical Center
Mt. Sinai Medical Center-NY
New Hanover Regional Medical Center
Northwestern U.
Penn State U. Hospital
Rush-Presbyterian-Saint Luke Hospital
UCSD Medical Center
U. North Carolina
U. Tennessee College of Medicine
U. California-Irvine
U. Minnesota Hospital & Clinic
U. Virginia
Virginia Mason Hospital
Washington Hospital Center
West Los Angeles VA Medical Center
Yale-New Haven Hospital
York Hospital

INTERNAL MEDICINE—PRELIMINARY

Maryland (10)
Out-of-State (9)
The Union Memorial Hospital
Bowman Gray/NC Baptist Hospital
U. Maryland-Mercy
Long Island Jewish Hospital

U. Maryland Hospital
Louis A. Weiss Memorial Hospital
Penn State U. Hospital
Saint Vincent's Hospital
U. Chicago Hospitals
Washington Hospital Center
West Los Angeles VA Medical Center
York Hospital

COMBINED PROGRAM

Maryland (2)
Out-of-State (2
U. Maryland Hospital
Medical College of Wisconsin
U. Michigan

NEUROLOGY

Maryland (1)
Out-of-State (2)
U. Maryland Hospital
V. Rush-Presbyterian-St. Luke Med Ctr
U. Chicago Hospital

NEUROSURGERY

Maryland (0)
Out-of-State (1)
Rush-Presbyterian-St. Luke Med Ctr

OBSTETRICS & GYNECOLOGY

Maryland (3)
Out-of-State (3)
Franklin Square Hospital
Queens Hospital Center
U. Maryland Hospital
U. Miami/Jackson Memorial Med Ctr
Washington U./Barnes

OPHTHALMOLOGY

Maryland (1)
Out-of-State (2)
U. Maryland Hospital
Northwestern U. Medical School
Washington Hospital Center

ORTHOPEDICS

Maryland (0)
Out-of-State (12)
Emory U. School of Medicine
Geisinger Medical Center
Hospital for Joint Diseases
Hosp U. Pennsylvania
Long Island Jewish Medical Center
Mt. Sinai Medical Center
New England Medical Center Hospital
Strong Memorial Hospital
Thomas Jefferson U.
U. Cincinnati
U. Texas Medical Branch
U. Hospital of Cleveland

OTOLARYNGOLOGY

Maryland (0)
Out-of-State (2)
Mt. Sinai School of Medicine-NY
Tufts U. Affiliated Hospitals

PATHOLOGY

Maryland (1)
Out-of-State (0)
The Johns Hopkins Hospital

PEDIATRICS

Maryland (8)

Out-of-State (9)
U.Maryland Hospital
Baylor College of Medicine
Emory U. School of Medicine
Hahnemann U. Hospital
Loma Linda U. Children's Hospital
Medical College of Virginia
Montefiore/Einstein Affil Hosps
Rhode Island Hospital
U. Miami/Jackson Memorial Med Ctr

PLASTIC SURGERY

Maryland (0)
Out-of-State (1)
New York U. Medical Center

PSYCHIATRY

Maryland (2)
Out-of-State (1)
The Johns Hopkins Hospital
Hillside Hospital-NY
U. Maryland Hospital

SURGERY

Maryland (1)
Out-of-State (9)
U.Maryland Hospital
Baylor College of Medicine
Beth Israel Hospital
Easton Hospital
Louisiana State U.
Medical College of Pennsylvania
Naval Medical Center
Ohio State U. Hospitals
St. Barnabas Medical Center
Vanderbilt U. Int. Hospital

SURGERY—PRELIMINARY

Maryland (1)
Out-of-State (5)
The Johns Hopkins Hospital
Hosp. U. Pennsylvania
Medical College of Pennsylvania
Rush Presbyterian-St. Luke Hospital
The Graduate Hospital
Mt. Sinai Medical Center

TRANSITIONAL

Maryland (0)
Out-of-State (3)
Central Texas Medical Foundation
York Hospital

UROLOGY

Maryland (0)
Out-of-State (3)
U. Health Care of Pittsburgh
U. Massachusetts
U. Pennsylvania

University Policy Statements

RIGHTS AND RESPONSIBILITIES FOR ACADEMIC INTEGRITY

The academic enterprise is characterized by reasoned discussion between student and teacher, a mutual respect for the learning and teaching process and intellectual honesty in the pursuit of new knowledge. By tradition, students and teachers have certain rights and responsibilities that they bring to the academic community. While the following statements do not imply a contract between the teacher or the institution and the student, they are nevertheless conventions that should be central to the learning and teaching process.

I. Faculty Rights and Responsibilities

A. Faculty members shall share with students and administrators the responsibility for academic integrity.

B. Faculty members shall enjoy freedom in the classroom to discuss subject matter reasonably related to the course. In turn, they have the responsibility to encourage free and honest inquiry and expression on the part of students.

C. Faculty members, consistent with the principles of academic freedom, have the responsibility to present courses that are consistent with their descriptions in the catalog of the institution. In addition, faculty members have the obligation to make students aware of the expectations in the course, the evaluation procedures and the grading policy.

D. Faculty members are obligated to evaluate students fairly, equitably and in a manner appropriate to the course and its objectives. Grades must be assigned without prejudice or bias.

E. Faculty members shall make all reasonable efforts to prevent the occurrence of academic dishonesty through appropriate design and administration of assignments and examinations, careful safeguarding of course materials and examinations, and regular reassessment of evaluation procedures.

F. When instances of academic dishonesty are suspected, faculty members shall have the responsibility to see that appropriate action is taken in accordance with institutional regulations.

II. Student Rights and Responsibilities

A. Students share with faculty members and administrators the responsibility for academic integrity.

B. Students have the right of free and honest inquiry and expression in their courses. In addition, students have the right to know the requirements of their courses and to know the manner in which they will be evaluated and graded.

C. Students have the obligation to complete the requirements of their courses in the time and manner prescribed and to submit to evaluation of their work.

D. Students have the right to be evaluated fairly, equitably and in a timely manner appropriate to the course and its objectives.

E. Students shall not submit as their own work any work that has been prepared by others. Outside assistance in the preparation of this work, such as librarian assistance, tutorial assistance, typing assistance or such special assistance as may be specified or approved by the appropriate faculty members, is allowed.

F. Students shall make all reasonable efforts to prevent the occurrence of academic dishonesty. They shall by their own example encourage academic integrity and shall themselves refrain from acts of cheating and plagiarism or other acts of academic dishonesty.

G. When instances of academic dishonesty are suspected, students shall have the right and responsibility to bring this to the attention of the faculty or other appropriate authority.

III. Institutional Responsibility

A. Constituent institutions of the University System of Maryland shall take appropriate measures to foster academic integrity in the classroom.

B. Each institution shall take steps to define acts of academic dishonesty, to ensure procedures for due process for students accused or suspected of acts of academic dishonesty and to impose appropriate sanctions on students found to be guilty of acts of academic dishonesty.

C. Students expelled or suspended for reasons of academic dishonesty by any institution in the University System of Maryland shall not be admissible to any other System institution if expelled or during any period of suspension.

(Approved Nov. 30, 1989 by the University System of Maryland Board of Regents.)

DISCLAIMER

No provision of this publication shall be construed as a contract between any applicant or student and the University of Maryland, Baltimore. The University reserves the right to change any admission or advancement requirement at any time. The University further reserves the right to ask a student to withdraw at any time when it is considered to be in the best interest of the University.

Admission and curriculum requirements are subject to change without prior notice.

ELIGIBILITY TO REGISTER

A student may register at the University when the following conditions are met:
(1) the student is accepted to the University,
(2) the student has received approval from the unit academic administrator, and
(3) the student has demonstrated academic and financial eligibility.

HUMAN RELATIONS CODE SUMMARY

The University of Maryland, Baltimore has a Human Relations Code for use by the entire campus community. The code represents the University's commitment to human relations issues. The specific purposes of the code include:

1. Prevention or elimination of unlawful discrimination on the basis of race, color, creed, sex, sexual orientation, marital status, age, ancestry or national origin, physical or mental handicap, or exercise of rights secured by the First Amendment of the U.S. Constitution; and

2. Establishing a timely, effective grievance procedure as an alternative to more lengthy formal processes for resolution of human relations issues.

A Human Relations Committee was created to oversee the code. It is comprised of campus faculty, administrators and students and is advisory to the president of the campus. The committee may institute educational programs and provide an open forum on human relations issues. In addition, the committee is charged with maintaining a mediation, investigation and hearing process for specific complaints of discrimination brought by students, faculty or staff. The code describes the particulars of the hearing process. It is the intent of the code to provide a grievance procedure for an individual on campus who wants a cross-section of the campus community to investigate and mediate a problem without having to resort to complaints to external agencies such as the Maryland Commission on Human Relations, complaints under personnel rules or lawsuits.

Copies of the Human Relations Code are available in the dean's office, Student Affairs and USGA offices in the Baltimore Student Union, and the Human

Resources Management and Affirmative Action offices in the Adminstration Building.

SERVICE TO THOSE WITH INFECTIOUS DISEASES

It is the policy of the University of Maryland to provide education and training to students for the purpose of providing care and service to all people. The institution will employ appropriate precautions to protect providers in a manner meeting the patients' or clients' requirements while also protecting the interest of students and faculty members participating in the provision of such care or service.

No student will be permitted to refuse to provide care or service to any assigned person in the absence of special circumstances placing the student at increased risk for an infectious disease. Any student who refuses to treat or serve an assigned person without prior consent of the school involved will be subject to penalties under appropriate academic procedures; such penalties to include suspension or dismissal.

CONFIDENTIALITY AND DISCLOSURE OF STUDENT RECORDS

It is the policy of the University of Maryland to adhere to the Family Educational Rights and Privacy Act (Buckley Amendment). As such, it is the policy of the University:
(1) to permit students to inspect their education records,
(2) to limit disclosure to others of personally identifiable information from education records without students' prior written consent, and
(3) to provide students the opportunity to seek correction of their education records where appropriate. Each school shall develop policies to ensure that this policy is implemented.

SCHEDULING OF ACADEMIC ASSIGNMENTS ON DATES OF RELIGIOUS OBSERVANCE

It is the policy of the University of Maryland to excuse the absence(s) of students that result from the observance of religious holidays. Students shall be given the opportunity, whenever feasible, to make up, within a reasonable time, any academic assignments that are missed due to individual participation in religious observances. Opportunities to make up missed academic assignments shall be timely and shall not interfere with the regular academic assignments of the student. Each school/academic unit shall adopt procedures to ensure implementation of this policy.

REVIEW OF ALLEGED ARBITRARY AND CAPRICIOUS GRADING

It is the policy of the University of Maryland that students be provided a mechanism to review course grades that are alleged to be arbitrary or capricious. Each school/academic unit shall develop guidelines and procedures to provide a means for a student to seek review of course grades. These guidelines and procedures shall be published regularly in the appropriate media so that all faculty members and students are informed about this policy.

POSITION ON ACTS OF VIOLENCE AND EXTREMISM HAT ARE RACIALLY, ETHNICALLY, RELIGIOUSLY OR POLITICALLY MOTIVATED

The University System of Maryland Board of Regents strongly condemns criminal acts of destruction or violence against the person or property of others. Individuals committing such acts at any campus or facility of the University will be subject to swift campus judicial and personnel action, including possible expulsion or termination, as well as possible state criminal proceedings.

Student Right-to-Know and Campus Security Act Request

The Student Right-to-Know and Campus Security Act (Public Law 101-542), signed into federal law November 8, 1990, requires that the University of Maryland at Baltimore make readily available to its students and prospective students the information listed below.

Should you wish to obtain any of this information, please check the appropriate space(s), fill in your name, mailing address and UMAB school name, tear off this form and send it to:

University Office of Student Affairs
Attn: Student Right-to-Know Request
University of Maryland at Baltimore
Suite 336, Baltimore Student Union
621 West Lombard Street
Baltimore, MD 21201

Complete and return this portion

- ❑ Financial Aid
- ❑ Costs of Attending the University of Maryland at Baltimore
- ❑ Refund Policy
- ❑ Facilities and Services for Handicapped
- ❑ Procedures for Review of School and Campus Accreditation
- ❑ Completion/Graduation Rates for Undergraduate Students
- ❑ Loan Deferral under the Peace Corps and Domestic Violence Services Act
- ❑ Campus Safety and Security
- ❑ Campus Crime Statistics

Name _____

Address _____

_____

UMAB School and Program _____

Campus and Area Maps

TO REACH THE CAMPUS

The University is located in downtown Baltimore, six blocks west of the Inner Harbor and two blocks north of Oriole Park at Camden Yards in the University-Center district.

From Washington, D.C. and Points South via I-95: From I-95 take Route 395 (downtown Baltimore) and exit onto Martin Luther King Jr. Boulevard, staying in the right lane. At the fourth traffic light, turn right onto Baltimore Street. Turn left at the second traffic light onto Paca Street. The Baltimore Grand Garage (visitors' parking) is immediately on the right.

From I-295N (Baltimore-Washington Parkway): As the Parkway enters Baltimore, it briefly becomes Russell Street and then Paca Street. Continue north to the intersection of Paca and Baltimore streets, where you will see the Baltimore Grand Garage (visitors' parking) is on the right.

From Annapolis and Southern Maryland: Follow Route 50E to I-97N to 695W (Baltimore Beltway) to I-295N (Baltimore-Washington Parkway), and follow directions from points south via I-295N.

From the East: Take I-95S to Route 395 (downtown Baltimore) and follow directions from points south via I-95.

Or, take 695W (Baltimore Beltway) to I-83S to its end. You will be on President Street. Go to the third traffic light and turn right onto Lombard Street. Continue about one mile and turn right onto Paca Street. The Baltimore Grand Garage (visitors' parking) is two blocks north on the right.

From the North and Northeast: North: Follow I-83S (Harrisburg Expressway) to its end in downtown Baltimore. Follow I-83 directions above.

Northeast: The campus is accessible from I-95S to either 395 (downtown Baltimore), and follow directions from points south via I-95, or 695W (Baltimore Beltway) to I-83S. Follow I-83 directions above.

From the West: Take I-70E to 695S to I-95N. From I-95, take Route 395 and follow directions from points sought via I-95.

TRANSPORTATION AND PARKING

Bus

MTA routes 1, 2, 7, 8, 11, 20, 35 and 36 serve the campus.

Subway

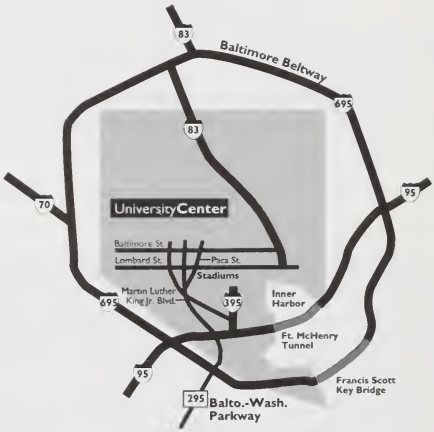
The Baltimore Metro runs from Johns Hopkins Hospital to Owings Mills. Stops nearest the University are at Lexington Market and Charles Center.

Light Rail

Light rail connects park and ride locations in northern Baltimore County and Oriole Park at Camden Yards, then continues south to Glen Burnie and Baltimore/Washington International Airport. The UniversityCenter stop is two blocks east of campus on Baltimore Street.

Train

MARC commuter service runs from Camden Station, 301 W. Camden St.



UniversityCenter Area, University of Maryland, Baltimore

VP Visitors Parking **DP** Dental Patient Parking **PP** Patient Parking Office **SP** Student Parking **P0** Parking

Academic, Administrative and Patient Care Facilities

Map Coordinate	
K2	Administration Building (AB) 737 West Lombard Street
K3	Allied Health Building (AHB) 100 Penn Street
L4	Athletic Center (AC) Pratt Street Garage
E8	Baltimore Dispensary (BD) 100 North Paca Street
K5	Baltimore Student Union (BSU) 621 West Lombard Street
E6	Biomedical Research Facility (BIO) 108 North Greene Street
E4	(Walter P.) Carter Center (WPCC) 630 West Fayette Street
E8	Century Building (CB) 506 West Fayette Street
J7	Davidge Hall (DH) 522 West Lombard Street
F3	Dental School (DS) 666 West Baltimore Street
J7	East Hall (EH) 520 West Lombard Street
J2	Environmental Health and Safety Building (EHS) 714 West Lombard Street
I9	James T. Frenkil Building (JTFB) 16 South Eutaw Street
I7	Greene Street Building (G5B) 29 South Greene Street
H3	Health Sciences Facility (H5F) 685 West Baltimore Street
L6	Health Sciences Library (HS/H5L) 601 West Lombard Street
C4	Hope Lodge (HL) 636 West Lexington Street
H3	Howard Hall (HH) 660 West Redwood Street
E6	Information Services Building (IS) 100 North Greene Street
G7	Law School/Marshall Law Library (LS/MLL) 500 West Baltimore Street
K7	Lombard Building (LB) 515 West Lombard Street
E7	Maryland Bar Center (MBC) 520 West Fayette Street
M4	Maryland Institute for Emergency (MIEMSS)
M4	Medical Services (MIEMSS) 653 West Pratt Street
K2	Medical Biotechnology Center (MBIO) 721 West Lombard Street
G3	Medical School/Frank C. Bressler Research Building (BRF) 655 West Baltimore Street
H2	Medical School Teaching Facility (MSTF) 1685 West Baltimore Street
K4	Nursing School (N5) 655 West Lombard Street
K7	Old Health Sciences Library (OHSL) 111 South Greene Street
D3	Pascault Row (PR) 651-665 West Lexington Street
F2	Pharmacy School (RX) 20 North Pine Street
C2	Pine Street Police Station (PSPS) 214 North Pine Street
D4	Ronald McDonald House (RMH) 635 West Lexington Street
I7	Social Work School (SSW) 525 West Redwood Street
L4	State Medical Examiners Building (SMEX) 111 Penn Street
H5	University of Maryland Medical System (UMMS) 22 South Greene Street
I8	University of Maryland Professional Building (UMPB) 419 West Redwood Street
H7	University Plaza (UP) Redwood and Greene Streets
F5	Veterans Affairs Medical Center (VAMC) Baltimore and Greene Streets
J3	Western Health Center (WHC) 700 West Lombard Street
I9	405 West Redwood Street Building (405R)
E8	502 West Fayette Street Building (502F)
K7	515 West Lombard Street Building (515L)
M3	701 West Pratt Street Building (701P)

Cultural and Civic Facilities

M5	Babe Ruth Birthplace/Baltimore Orioles Museum (BRB/BOM)
I6	Dr Samuel D. Harris National Museum of Dentistry (NMD)
D7–8	Lexington Market (LM)
D6	Market Center Post Office (MCPO)
I1	Old Saint Paul's Cemetary (OSPC)
N9	Oriole Park at Camden Yards (OP)
F7	Westminster Hall (WMH)

Parking Facilities

F8	Baltimore Grand Garage (BGG) (visitors)
F4	Dental Patient Parking Lot (DPP)
C3	Lexington Garage (LXG) (students)
H7	University Plaza Garage (UPG) (patients and patient transporters)
	Public Parking Facilities (P)

Assigned University Parking

B4, C4–5	Koester's Lots (KL)
E5	Parking Office (PO)
D5	Pearl Garage (PG)
K3	Penn Street Garage (PNG) (visitors)
L5	Pratt Street Garage (PTG)

UNIVERSITY OF MARYLAND